

THE AUTOMOBILE

OVER roads which included good and bad and still suffered from Winter's onslaught, mud-bogged in some parts of Connecticut, and more uniformly acceptable in Massachusetts, the route was a trying one for the twenty contestants who participated in the endurance run, held March 11, for the Chester I. Campbell trophy. Fourteen made the difficult journey from New York City to Boston with absolutely perfect scores, necessitating a drawing for the handsome prize cup. This will be held at an early date at a luncheon given by L. H. Perlman, the first winner of the trophy, to all the contesting drivers and entrants. Of the cars penalized only two had large scores marked against them, and these were caused by the heavy condition of the roads in some parts of the route.

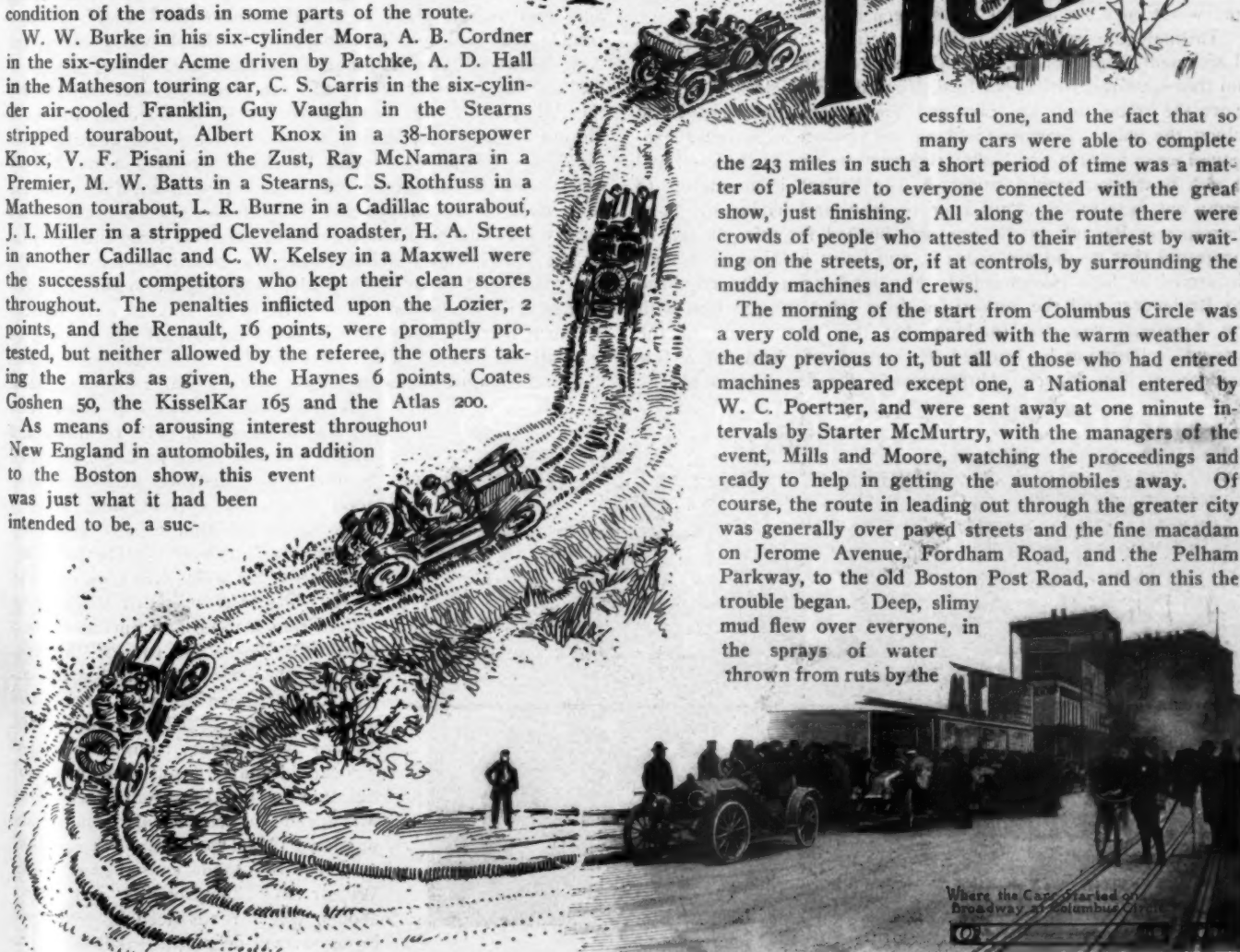
W. W. Burke in his six-cylinder Mora, A. B. Corder in the six-cylinder Acme driven by Patchke, A. D. Hall in the Matheson touring car, C. S. Carris in the six-cylinder air-cooled Franklin, Guy Vaughn in the Stearns stripped tourabout, Albert Knox in a 38-horsepower Knox, V. F. Pisani in the Züst, Ray McNamara in a Premier, M. W. Batts in a Stearns, C. S. Rothfuss in a Matheson tourabout, L. R. Burne in a Cadillac tourabout, J. I. Miller in a stripped Cleveland roadster, H. A. Street in another Cadillac and C. W. Kelsey in a Maxwell were the successful competitors who kept their clean scores throughout. The penalties inflicted upon the Lozier, 2 points, and the Renault, 16 points, were promptly protested, but neither allowed by the referee, the others taking the marks as given, the Haynes 6 points, Coates Goshen 50, the KisselKar 165 and the Atlas 200.

As means of arousing interest throughout New England in automobiles, in addition to the Boston show, this event was just what it had been intended to be, a suc-

Over Muddy Roads from the Metropolis to the Hub

cessful one, and the fact that so many cars were able to complete the 243 miles in such a short period of time was a matter of pleasure to everyone connected with the great show, just finishing. All along the route there were crowds of people who attested to their interest by waiting on the streets, or, if at controls, by surrounding the muddy machines and crews.

The morning of the start from Columbus Circle was a very cold one, as compared with the warm weather of the day previous to it, but all of those who had entered machines appeared except one, a National entered by W. C. Poertner, and were sent away at one minute intervals by Starter McMurtry, with the managers of the event, Mills and Moore, watching the proceedings and ready to help in getting the automobiles away. Of course, the route in leading out through the greater city was generally over paved streets and the fine macadam on Jerome Avenue, Fordham Road, and the Pelham Parkway, to the old Boston Post Road, and on this the trouble began. Deep, slimy mud flew over everyone, in the sprays of water thrown from ruts by the



Where the Race Started on Broadway at Columbus Circle



At New Haven, Where the Cars Checked In at the First Control.

flying wheels, and the surface underneath the mud was so rough that it threw the machines from side to side and bounced the passengers around. A twenty mile an hour schedule had been mapped out, with the first control at New Haven, making car No. 1, Burke's Mora, due there at 10.30. Before the contestants had gone very far they realized that they must travel as fast as possible over good roads in order to go slowly over the worst ones, on account of the deep mud.

Through the suburban resident sections of New Rochelle, Larchmont, Mamaroneck, Rye, Portchester, into Connecticut and on through Greenwich, Stamford, Norwalk, Fairfield and Bridgeport the route took the cars and there were many people all along the way. Near Fairfield an unfortunate occurrence happened when a horse was badly frightened by one of the cars, and a rich Bridgeport manufacturer, A. W. Wallace, in attempting to jump out, was killed. Paul Lacroix, who was driving his 35-45 horsepower Renault in the run, was blamed for this, though he professed that he did not cause it, and knew nothing of it until informed by New Haven police. His number was phoned ahead to Bridgeport and the authorities there tried to stop him with an American flag, but thinking that this was a part of the general celebration he brushed by, and so was held for a few minutes at New Haven. Unfortunately the flag was caught by

the car and damaged, and the police of Bridgeport added the charge of publicly mutilating the national emblem to that of reckless driving preferred by other places. At a hearing a few days later, Mr. Lacroix was fully exonerated, not only of the blame in connection with the death of Mr. Wallace, but also of wilfully damaging the flag. It was brought out that the flag was not unfurled when waved, consequently it could not be distinguished from a piece of red bunting, and, moreover, the policeman who handled it was not in uniform. Mr. and Mrs. Lacroix, however, presented the authorities with a new emblem to replace the one lost. At Fairfield there was no trial, those in charge of the prosecution having satisfied themselves, from the previous examination of witnesses, that Mr. Lacroix was not implicated. This trouble cost him his clean score. Inasmuch as his protest was not sustained by Referee Bradley, Mr. Lacroix has

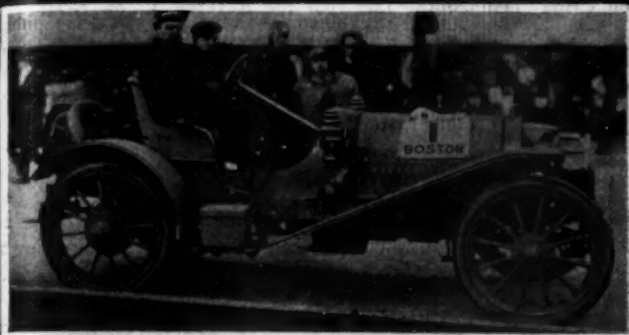
protested to the Contest Board of the A. A. A., claiming that he is penalized for an accident probably caused by another car.

Over an hour before the Mora was due at the first checking station, Albert Dennison, who has figured as a Knox pilot with Bourque in their many victories last season, was one of the first in, sharing the honors about evenly with the Acme driven by Cyrus Patchke, who drove the Acme in the Vanderbilt race, and won second place in the Fairmount Park race. Burke's rumble seat and tool box loosened in the bumping along the New York and lower Nutmeg State roads and he had to stop to fix it. The only car which did not reach the first station was the Atlas, which was being driven by C. H. Beecher, and as it did not report at any station its penalty was placed at 200 points. No little trouble was found by the contestants a number of times in finding the route into strange towns, not following the route book closely enough and in one or two cases a change from these books had been made. All the cars had some time to wait on the Yale campus, and the travelers spent it in discussing the bad roads, and in wondering what would come next. The two men in the Cleveland car, and those in the Haynes were sources of much merriment to the onlookers because of the coating of mud all over them. Their cars did not have rear fenders and the tire changes threw a plaster over them, front and back.

A short control was that from New Haven to Hartford, only 42 miles, and Burke was due there at 12.36, but even in that short distance with none too good roads, the drivers were able to make up enough time to give them half an hour for lunch at the Heublein, arrangements for which had been made by J. K. Mills, who preceded the cars by rail. From Hartford to Springfield was absolutely the worst run of the trip, although there was no control in the latter city, for the roads were terrible and as one veteran of Glidden tours said, "There was about twenty miles of 'Crocker, Indiana,'" and those who participated in the 1907 tour knew what was meant. Perhaps only Road Commissioner MacDonald can explain the methods of road construction from Winsor to Thompsonville and thereabouts, where roads deep in mud were being covered deep with sand, so that it was impossible for the cars to go



The Halt at Hartford, Where Lunch Was Served to the Hungry.



TORA READY TO LEAVE WORCESTER.



VAUGHN AND HIS STEERING AT A CONTROL.



FRANKLIN AT THE NEW HAVEN CONTROL.



KNOX AFTER ARRIVAL AT WORCESTER.



MAXWELL AT WORCESTER.



ACME FINISHING AT BOSTON.



PREMIER READY TO LEAVE WORCESTER.

Some of the Perfect Score Cars that Completed the New York Boston Run

CADILLAC ENTRY ARRIVE AT WORCESTER.

RUTHFORD MATHEWSON AT NEW HAVEN.



through them without difficulty. As big and powerful machines as the Mathesons and the Stearns had to use their low and second speeds, and the first three cars through, the Mora, Hall's Matheson and Vaughn's Stearns, took to the trolley tracks as a better highway. From Springfield into Boston, however, there was no trouble, many of the roads being in remarkably fine shape for this time of the year.

The control next after Hartford was at Worcester, where the local automobile club had affairs in charge, and it was a run of 79 miles, with 42 miles more to cover into Boston. At Worcester a number of Boston autoists met the muddy caravan, Watson Coleman, of the White branch, and R. H. Johnston, of that company, acting as pilots in a large White car, and a number of other machines joined the party. It was just getting dark as the cars entered Commonwealth avenue, but they had no trouble in reaching their destination in front of Mechanics Building where they were checked in. The accident at Fairfield had caused the authorities from Worcester into the finish to be stricter even than usual and so no high speed was attempted by the contesting drivers. In most places, however, there was little opposition to seeing the cars go about as fast as possible.

Fourteen cars in a deadlock out of twenty was not a pleasant outlook for those who wanted the run to decide a definite winner, but on the other hand, it generally pleased the trade, as showing what the cars are able to do, in this kind of weather, on bad roads, when kept going at high speed. The cars and men taking part in it made up a really representative assortment, more so than was expected when the event was gotten up on short notice. The machines all seemed to be good ones and well able to undergo the test again, at once, without further preparation than oiling. In the lists of cars there were some which have been in the public eye before, the Stearns, which Guy Vaughn drove, being the same one used in racing, the Maxwell, driven by Kelsey, being the one entered in the Fairmount Park race in Philadelphia, the Premier, driven by MacNamara, being the one which finished the Quaker City Motor Club January run with the only perfect technical score, the six-cylinder Mora being the first of that type built by the Mora Company, the Cleveland being one which raced on tracks around New York City last fall, and several other cars have been especially prominent. The big Matheson touring car, driven by Hall, was the only seven-passenger car in the run and it was well up with the leaders at all times, starting fifth and generally finishing third at controls.

The contestants often ran in groups, the first one composed of the two Stearns, which were very fast, the Matheson touring car, the Mora roadster and the Acme tourabout. The Renault also gained the reputation of being extremely fast, but it was delayed by the police and had a handicap to overcome. Pisani, the Züst driver, was criticized by others for his recklessness, and his way of running at about forty miles an hour and then turning around in his seat to see who was behind, so that once in doing this he had to make a quick application of his brakes and nearly precipitated a mix-up between himself, Guy Vaughn and Hall's Matheson. C. E. Force had his Lozier car stripped and driven by Ralph Mulford, and these two were well plastered with yellow clay before they had gone very far. Kelsey showed the speed of his Maxwell between Hartford and Springfield by passing fifteen cars and coming in about fifth instead of twentieth. The two Cadillac cars, the KisselKar and the Coates Goshen took the run very easily, though the latter ones had to stop and were late, the Coates Goshen at Boston and the KisselKar at New Haven. Carris in his six-cylinder Franklin took the run easily but fast and was one of the first into the Worcester control. His was the only air-cooled car in the contest, and as is usual, had no reason to fear any trouble from that score. One of the largest cars was the Matheson tourabout, a four cylinder one, driven by C. F. Rothfuss, which made a perfect run throughout the trip.

There was some discussion as to whether there would be a run-off but the entry blanks stipulated that in case of a tie there would be a drawing for the trophy, and that would have been held

on Friday but for the fact that the Referee, L. M. Bradley, of the A. M. C. M. A., decided to wait until he found out what would happen to Lacroix. The Lozier entrant protested because of a mistake claimed to have been made by the checker at Worcester in sending him away two minutes out of order.

The latter part of the run was marred by an accident in which E. P. Blake, the New England Jackson agent, F. Ed. Spooner, the photographer, and C. P. Richardson, of New York, were involved. They went out to meet the contestants and while coming back, in Marlboro the car turned turtle, throwing out the occupants. Messrs. Spooner and Richardson suffered merely from shock, but Mr. Blake was taken to the hospital, where it was stated that his injuries were not serious. The result of the run caused much jubilation among the tire men. Guy Vaughn's Stearns was equipped with Continentals; the Renault, Züst and two Mathesons had Michelins; the Premier and Franklin had Goodrich, and seven others had Diamonds.

Chairman Frank B. Hower, of the A. A. A. Contest Board, sent out to Worcester a pacemaker to lead the cars into the finish, in Glidden Tour fashion. One of the cars in the run left Worcester about five minutes after the pacemaker and averaged at least 35 miles an hour over roads where there was little or no traffic, and never once caught up to the pacemaker. Those familiar with past Glidden Tours saw little difference between the speed of the run from New York to Boston and the annual A. A. A. event, for there was no more speeding then than in the annual mid-Summer national contest.

PHILADELPHIA CHAUFFEUR GETS ONE YEAR.

PHILADELPHIA, March 15.—Irresponsible chauffeurs and owners who are inclined to dally with the local speed laws, to the possible injury of their fellow-citizens, were startled last Friday when Harry Brutslin, a local chauffeur, on trial for running down and injuring Miss Ada Fadeley, on October 31 last, was convicted of aggravated assault and battery, and sentenced by Judge Sulzberger to one year in the county prison.

Before sentencing Brutslin, the judge said that conditions required that he should be made an example. "Men such as you seem to forget that the streets are for the use of all the people. Under the local police regulations all trolley cars are required to come to a full stop on the near side of every cross street, and it is the duty of all other vehicles, and especially automobiles, to do the same. The tooting of a horn is only an aggravation of the offense of reckless speeding, as it tends to confuse and perplex a pedestrian."

The holding in bail, in the large sum of \$2,000, of A. M. Van Osten, who ran down Edward S. Vaughn on February 19, and who has since been sued by the latter for \$10,000, is additional evidence that the announced determination of the local judges to put a stop to the overspeeding habit is no "fairy tale."

DETAILS OF DETROIT RUN COMPLETED.

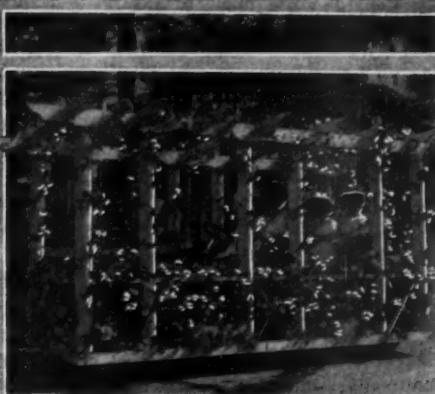
DETROIT, March 15.—Details of the second annual reliability run of the Detroit Automobile Dealers' Association, which will differ materially from last year's event, have been completed. Detroit will be the starting and finishing point on each of the four days' runs, the machines being parked at the Hotel Tuller each night. The addition of another day will also make the contest more strenuous, although that will be more than offset by the advantage of not having to spend a night in a country hotel, where accommodations are far from first-class, as was the case last year.

May 10-13 are the dates selected for the run, the first day's journey being to Port Huron and return, taking in Mt. Clemens, Marine City, Ste. Clair, Capac, Romeo and Utica. The second will be to Jackson, Adrian, Tecumseh, Saline and Ypsilanti, thence back to Detroit. The third day will be to Pontiac, Lapeer and Flint and return, and the fourth to Lansing and return. A large number of entries are promised.

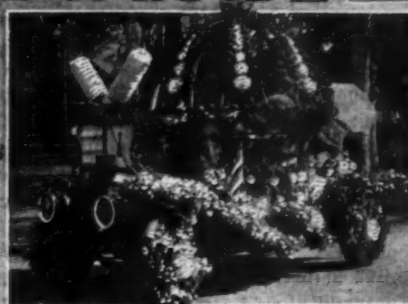
HAWAII'S ANNUAL FLORAL PARADE



Kamiahoe Semina Ry's Stevens-Duryea
"The Manoa Rainbow"



Pope-Hartford - Winner of Most Beautiful Decoration



Kiesel-Har - That Won Prize for Harmonious Color

WASHINGTON'S BIRTHDAY has come to be the one big fête day in Hawaii, and this year was no exception to the rule. The floral parade at Honolulu was witnessed by the largest crowd of spectators in the history of the event, these including representatives from eight or nine nations. A conservative estimate of the number of tourists places this at two thousand, many of them having timed their visit to coincide with the big "doings."

The parade was larger than any previous year and was materially assisted in the making of a fine impression on the tourists by perfect weather. The character of the designs and decorations of the entrants was fully up to the high standard set in previous years. The entries were spread evenly over five classes, but the first, largest and most important was the automobile division. In this four prizes were awarded to the best float, most original decorations, best runabout and best touring car. Great zest was given to the affair by the capture of the last-named prize by the Japanese Consul-General Uyeno. This was intended to show the existing "aloha" between America and Japan, the idea being expressed by the use of suitable flowers. Thus the meaning of the combination of American Beauty roses with the cherry blossoms of Japan was plain to all.

The judges were all visitors, "malihinis" in the native tongue, and were chosen from among the guests at the various hotels. Their work, always so difficult, was splendidly done, and no adverse comment was heard. One source of regret, however, was the small number of prizes, relative to the large number of contestants.

One of the most daring designs, and one that showed the careful work of preparation, was the float entered by the crew of the naval tug Iroquois, this being a nearly life-sized duplicate of the tug. The whole conception was splendid and was worked out to the smallest detail, even the lifeboat, filled with calla lilies, swinging from the davits.

A car of equal interest was the National car, on which the color scheme of red, white and blue was worked out in carna-

tions, daisies and asters. Balloons of the three colors floated above the car, the body of which was covered by flags and

flowers. This was cheered all along the line of the march. Another semi-patriotic float, and a very appropriate one, represented what happened to George, meaning George Washington, of course. This presented a Mount Vernon tableau shortly after the cherry tree was no more, and showed the paternal Washington, birch in hand, and the disconsolate son preparing for the worst.

The beautiful decorations and costly floats were not confined to the automobile division by any means, the wagon and bicycle classes revealing many artistic productions. In the latter the Japanese, with their clever designs, captured a majority of the prizes. Most of these were fishes or animals.

The wagon float which took first prize was that entered by a well-known musician, and was intended to represent Music. It was an exquisite creation of violet and white paper flowers, surmounted by a lyre in the same colors. The harness was wrapped with purple, contrasting with the horses, while all of the occupants were costumed in harmony with the color tones of the float.

In the evening a street carnival of the Mardi Gras order was held. This was an innovation this year, but the spirit in which it was received and the fun everyone had out of it, without any roughness, insured it as a permanent feature of future carnivals. The Elks and the Fifth Cavalry boys helped greatly by turning out in large numbers and with a fine lot of original ideas in the way of costumes.

The day was fittingly closed by an elaborate masked ball at the Alexander Young Hotel roof garden. The costumes were surpassingly beautiful, and the roof garden, with its lights and floral decorations, showed up at its best. The attendance was large and was a merry jostling crowd of fun-makers, who danced and danced until the musicians were tired, and even then called for more. After it was all over everyone voted it the most elaborate and by far the most successful of the Washington Birthday celebrations which have been held in Honolulu.



Cadillac with a Bivy of Bouquet



National Electric Light



Japanese Consul General Uyeno's Prize Winning Touring



INVOLVING ROAD RACES AND LEGAL SPEED

By E. P. CHALFANT, GENERAL MANAGER A. L. A. M.

THE public must now realize that automobile contests are in their infancy. However, the most expert men in the business cannot tell what turn the sport is going to take next. The whole manufacturing world is divided on the subject of racing. One maker says the sport is of no benefit to the industry; another says it helps more than anything else. Some favor a speedway, but urge the importance of practical contests.

Racing undoubtedly has a very material function in mechanical progress. It develops the art of driving specifically, and executive ability broadly. It has a great human interest, which will not and should not be suppressed. It is undoubtedly the supreme test for one thing, and its excitement and interest have proven of such a nature as to draw the biggest crowds ever seen at any sporting event. The road race naturally stimulates the strongest efforts of the designer, the draughtsman and the manufacturer. To continually improve the result to the limit of skill is to gain for the factory and the industry.

Healthy growth and development can, however, proceed on no other than rational lines. The members of the Association of Licensed Automobile Manufacturers have done much to encourage rational contests and keep them within proper bounds.

Recently in various parts of the country challenges to speed and endurance contests on the public highways have been issued. Wherever such contests involve a violation of the village, town, city or State speed laws, obviously they should not be tolerated. The inhabitants of the territory passed through at an illegal rate of speed may very reasonably have a feeling of bitter and retributive resentment, which may very possibly record itself in positive legislative action, which will oppress the fair-minded autoist and militate against the interest of the automobile industry as a whole, and impede the normal development of mechanical road traction. Such short-sighted affairs can only tend strongly to precipitate contemplated adverse laws in the form of bills proposed in the various State halls of legislature, or, unhappily, to defeat the passage of such liberal legislation as may have

received some encouragement. There was an instance of the last mentioned kind in a State nearby recently.

It is impossible to foretell what may be the result of any "cross-country" road race at speed. It is difficult to run a race in which speed is not used, no matter how the driver may be limited in action. Invariably speed laws will be broken.

Let us consider the worst effect of all. Motorists in this country, assisted by a good many other people, are doing their utmost to get good roads appropriations through State legislatures and Congress. The violation of speed laws can only alienate friends in this field and prevent the making of new ones. It should only be necessary to recall to any forgetful mind that good roads are largely the sine qua non of autoing.

If road races must be run, a twenty, thirty or forty-mile course should be arranged for by consent and according to law; and be properly protected and policed during the conduct of the race. Doing anything else is worse than unkindness to a dumb animal. The automobile can easily survive conflict with its legitimate enemies. Nevertheless, it should be protected as much as possible from its unwise friends. Many of the members of the Licensed Association have consistently supported sensible contests and will continue to do so.

Incidentally, special challenges are seldom justifiable. There are opportunities enough to race on properly guarded courses in due observance of law.

A reliability contest, of not more than a day's duration, over recognized automobile thoroughfares, conducted by promoters who obligate themselves that speed laws will not be violated (safeguarding this obligation by proper controls), can result in the fair promotion of the sport, and in properly testing out new models for manufacturers, particularly when such contests are held under difficult road conditions. A notable case in point is the contest held between New York and Boston this month, the controls being so well placed as to make it practically impossible to exceed the country speed laws of twenty miles an hour.

"THE MORE THE HASTE, THE LESS THE SPEED"

By CHAS. E. DURYEA.

CONTEST time of year is nearly here. Races, tours and hill climbs will be the menu generally as heretofore. Yet everybody knows that speeds on the level and up hills are faster than there is any call for. No sane buyer cares to rush the hills at dangerous speeds. The gain does not pay for the cost in fuel, tires and other things. Same with road speeds. Our lawmakers are trying to discourage more road speeds and are hitting the innocent with the guilty. Rather more, in fact, for it is the slow-going law-abiding driver that gets caught while the scorchers gets away. And still we inaugurate such contests and fan the flame which destroys our rights. And to what good? Everybody knows now that speeds are a matter of price. Pay enough and the rig can be built that will beat anything gone before. But what is the use?

The average man claps his hands, as at any fireworks, and buys something he can use. Makers who have goods to sell ought to encourage this kind of man. Why does not the awarding of hill-climbing prizes to the rig which gets the lowest product of time, multiplied by price, solve the problem? This is certainly what the buyer wants. Low time and low price. It is easily figured. The man at the roadside can get the result, just as he now pulls his cheap watch on the time only. It would therefore be a popular way of judging. But it needs a little agitation.

Why not coasting contests? These would show the efficiency of the mechanism. Let the hill be coasted with clutch set and

spark and throttle off. Oil, brakes and everything else normal. Then the man learns whether he is wasting fuel turning mechanical parts, or using it to propel his vehicle. Efficient size of wheels, efficient tires and all such parts would figure in such a test, and the buyer would learn something practical. Tests by coasting with clutches disengaged would also show up the efficiencies of the various transmitting devices quite well. But in such tests it would be necessary to classify according to type of transmitting mechanism or rigs like the Duryea buggyaut, which has no parts turning when coasting except the ball bearing vehicle wheels, would have an immense advantage. There must be an enormous difference in the fuel costs of a vehicle which can be towed by a pull of three to five pounds and one which requires thirty to fifty pounds, as many rigs do. The coasting contest brings this out in such a way as to disclose the real utility of an automobile, reflecting stability as well.

A towing contest would do this also, but not so easily and simply. Yet I do not see why our able committeemen having such contests in charge cannot devise rulings which will bring out the things practical buyers need to know, and leave in the background the facts already too well known. Forget the "cannon." Fourth of July does not come frequently. Give us something that will put meat in the pot. Then, give us the pot, and let us have the fire, but refrain from marking sizzle all over the aggregation as if, indeed, we have lost the process by which we can be calm and cool, or, better yet, sane.

SAFETY AND UTILITY OF AUTOMOBILE STEERING SYSTEMS

By Thos. J. Fay

STEERING is not necessarily a safe enterprise because speeding on curves is avoided. Speeding on a tangent (in a straight line) has the disadvantage of making it difficult to steer clear of an obstruction if, perchance, the speed is so great that the car cannot be stopped in time, and if room is not afforded sufficient to clear the obstruction.

Applying the brakes will be of no value at all when the speed of a car is so great that it cannot be stopped within the distance afforded. True, a car can be slowed down, and in so doing

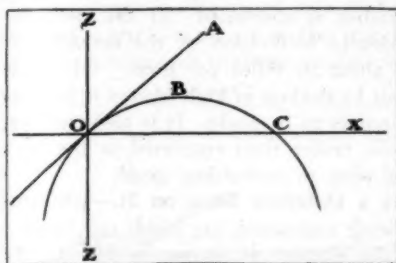


Fig. 9.—Diagram of unrestricted projection of bodies in atmospheric air.

way, since, presupposing a case in which a car cannot be stopped, is admitting that an obstruction will be collided with, assuming it is in the way.

It would be easy enough to say, do not go so fast that the car cannot be stopped within the allowable distance. But this is so self-evident as not to require any attention, and the other side of the question has its serious phase. Attempting to turn out after it is found that the speed cannot be checked is dangerous, since if a car turns over it is likely to do more damage to the occupants than as the direct result of a collision, if the same is intelligently courted.

High Speed Will Cause a Car to Capsize.—The chart, Fig. 8, shows under what conditions a car will capsize if the speed is too high, and if the turn is short enough to introduce a sufficient turning moment. The chart shows, for instance, that if a car is turned on a 50-foot radius it will capsize when it is going at 26 miles per hour, in round numbers. In this case it is assumed that the car is well designed, and that the road is level and hard. If the road is slippery, it is then that the car will skid until the wheels take a "purchase" against some obstruction, and then the car will capsize. The end will be the same in either case, and the method is not to be recommended.

If a turnout (which really amounts to speeding on a curve) is so fraught with dangers, the question is, what is the best thing to do? If, in an emergency of this kind, the car is steered straight ahead in order to prevent turning over, and if a collision follows, the main point is to so direct the collision as to be sure of a clear space ahead in which to shoot out of the car and travel the greatest possible distance in the air, unobstructed, before landing.

Safety Lies in Leaving the Car.—Following the law of the unresisted projectile seems to be the safest course, and, as Fig. 9 shows, the performance will be in obedience to a compound of vertical motion of a falling body, and of the horizontal motion due to the horizontal component of its velocity of projection. In the figure, let O represent the point of projection (the seat of the car), and while it will be impossible to tell the "elevation" of the path, let the direction OA indicate an

upward inclination. In this way it will be feasible to say that the path OA as it relates to OX will be at some angle. Let the angle $XOA = \theta$. The horizontal increment will be equal to

$$(5) \dots \dots \dots V \cos \theta$$

The vertical (downward) increment will be

$$(6) \dots \dots \dots V \sin \theta$$

When

V = velocity of projection, so that, at the instant of projection, the two components will be in the relation as above given.

Gravity influences the situation in accordance with the gravitational laws, just as would be the case were a motorist to fall out of the seat to the ground, the vertical distance from the seat to the ground, and the fall will be no more damaging if the same motorist shoots ahead for whatever the distance may be, complying with the law of "unresisted projectiles." The time interval during the projection will be that required for the motorist to fall to the ground direct from the seat. The distance that the motorist would shoot ahead could be worked out, but it would be of small avail. In one case that the author had a chance to examine into closely the distance was 69 yards, in which case the motorist was not hurt, for the reason that he did not strike anything while going through the air more resistant than the air.

In an emergency such as this it would seem as if it is better to select the collision point with a view to accepting the projection, rather than to turn out, and in so doing be sure of turning the car over with good chances of landing under the same. The main reason for thus attacking the subject, however, is to clearly indicate that it is not safe to drive under conditions which will not allow the motorist to see ahead far enough to allow him to judge of the nature of the road if the speed is so high that the brakes will not serve for the purpose of quickly arresting motion, thus making it absolutely a question of steering.

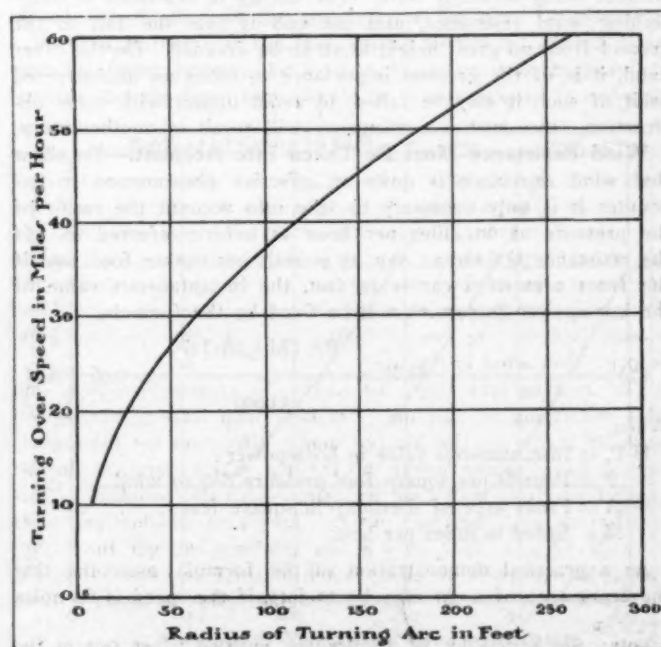


Fig. 8.—Showing speed on curves which will cause capsizing.

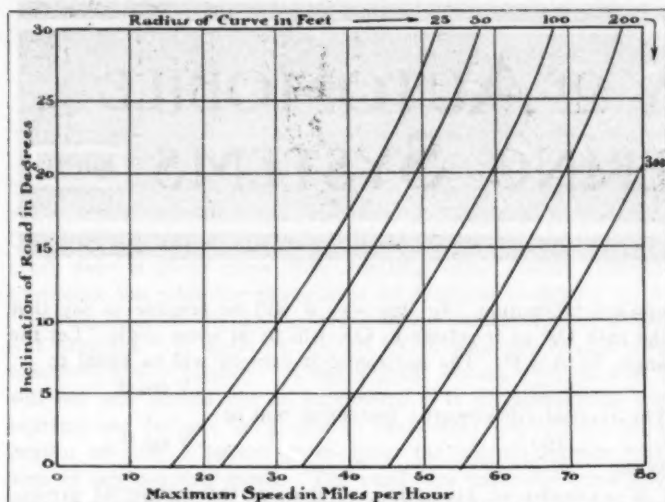


Fig. 11.—Curve showing advantage gained by banking roads at turns to suit different speeds.

That the future will hold some improvements in this connection is shown by the latest devices abroad*, in which air is used to help snub motion, and since the air is in no way connected to the question of adhesion of the tires to the road, it follows that air brakes will put a new face on the situation and possibly shorten the distance in which motion can be arrested. Fig. 10 gives information in relation to the resistance offered by air to the transit of a body, and the chart will apply in two ways to the point to be here made. As the chart shows, if a car is going, say, 60 miles per hour, the wind resistance will be between 13 and 14 pounds per square foot.

Air Propellers Will Serve for Brakes.—If an air propeller will serve to drive an airship, which is a settled fact, the same air propeller will serve to stop a car, and it matters not at all if the car is going through the air or rolling over the ground on wheels. If the car is rolling over the ground it will be possible to snub motion with the idea of reducing speed to a safe point, in view of the road condition (a) by using the brakes up to the limit of the tractive ability, and (b) through the use of the wind brakes, which will work whether the wheels slip or not.

It is this same wind resistance which enables one to be projected out of a car and land at a considerable distance ahead without being seriously hurt. The energy is expended in overcoming wind resistance, and the end is that the fall to the ground from no great height is all to be dreaded. On the other hand, it is of the greatest importance to select an unobstructed orbit, if such it may be called, to avoid impact with some obstruction, since such a contingency will result in another story.

Wind Resistance Must Be Taken Into Account.—To show that wind resistance is quite an effective phenomenon to encounter it is only necessary to take into account the result of the pressure at 60 miles per hour as before referred to. If the resistance is fixed at, say, 13 pounds per square foot, and if the front area of a car is 10 feet, the instantaneous value of the horsepower increment will be fixed by the formula,

$$(7) \dots\dots\dots \text{H.P.} = \frac{PA (M \ 5,280 \mid 60)}{33,000} = 0.96 \text{ PAM.}$$

When,

H.P. = Instantaneous value in horsepower;
P = Pounds per square foot pressure due to wind;
A = Front area of the body in square feet;
M = Speed in miles per hour.

As a practical demonstration of the formula, assuming that the front area of a car may be 10 feet, if the speed is 60 miles

Note: See article by W. F. Bradley, entitled "Just Out of the Shops Abroad," in this issue of "The Automobile," in relation to the subject of wind brakes.

per hour, the wind resistance will have the equivalent value, as follows, almost without respect to the shape of the front area against which the wind must beat—nor does it seem to make any difference whether the surfaces are at the front of the car, or to the back:

$$\text{H.P.} = \frac{13 \times 10 (60 \times 5,280 \mid 60)}{33,000} = 20.8.$$

Thus far the discussion has taken into account hard, level roads. If roads are "banked" on curves it is quite another story that may be told, for then the speed can be increased as Fig. 11 will show. As the curves look, if the inclination of the embankment is 20 degrees, and if the curve is at a radius of 300 feet, the speed can be 80 miles per hour, which is a very considerable increase over what can be allowed if the road is level. On a level road it was shown in Fig. 1, Part I, of this article that the speed could be but 53 miles per hour with the same radius of curvature, i.e., 300 feet.

Banked Curves Make for Safety.—Another look at Fig. 11 will show that decreasing the radius of the arc of turning has the usual effect even if the road is banked, in that the speed must be lowered if the radius is shortened. If the radius is, say, 100 feet, then a 20 degree inclination of the embankment will allow of a speed of about 60 miles per hour. Of course these speeds sound high, but by dealing in high figures it becomes possible to accentuate the points to be made. It is also true that banking should be in excess rather than restricted in the cases requiring attention with a view to increasing speed.

Camber of Roads Puts a Different Face on It.—Unfortunately, roads, instead of being embanked, are cambered (with a crown at the center) in the manner as shown in Fig. 12, the amount of the camber differing in the several localities, and under varying conditions. The "crown" or camber of the road is quite pronounced on many "pikes" as to become a menace under certain conditions of steering. The general formula of the crown which would serve well for drainage purposes in practice is given as follows:

$$(8) \dots\dots\dots O = C \left(\frac{D}{R} \right)^2,$$

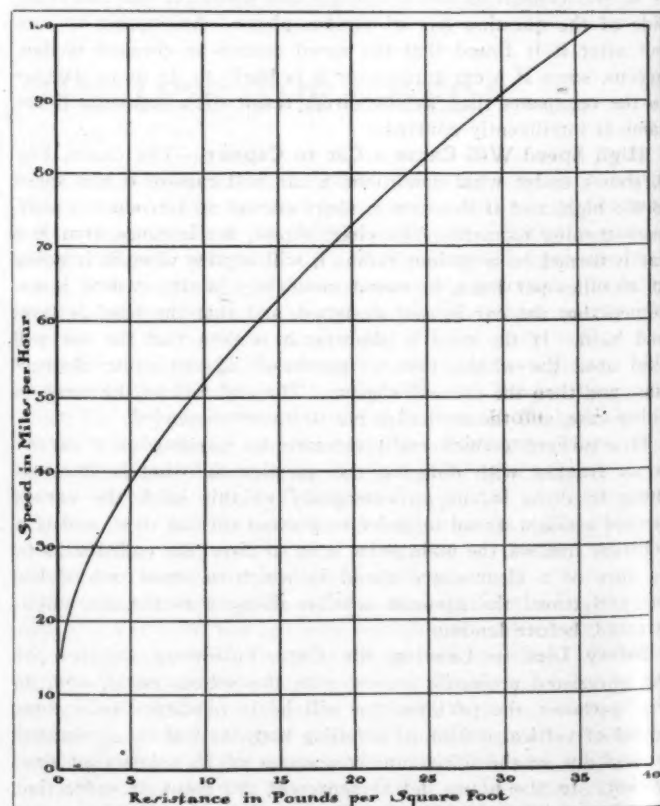


Fig. 10.—Curve showing resistance of bodies through air.

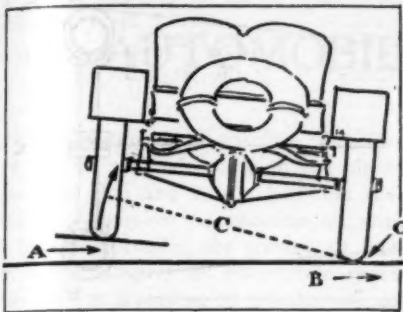


Fig. 14.—Diagram showing how in-wheel and the fact that, in turning, the off side of the road is used, it is plain to be seen that, instead of an embankment, it is a declination that will be used.

When,
O=Ordinates in inches;
C=Crown in inches;
D=Distance in feet
from center of the
road to the ordi-
nates, in each case;
R=One-half the width
of the roadway in
feet.

Taking into account
the camber of the road

the road is used, it is plain to be seen that, instead of an embankment, it is a declination that will be used. The effect of this declivity is the reverse to that of an embankment, as the curves, Fig. 13, show. Looking at the curve will show that on the 5 degree slope (downward) the safe speed is reduced to 24 miles per hour, approximately, if the radius of the turn is 100 feet. The same turn can be made at a speed of 32 miles per hour if the road is level, as the curve also indicates, and with an embankment of 5 degrees it is shown in Fig. 13 that a speed of 38 miles

a car tends to turn in a circle the axis of which will be of a cone, as shown in Fig. 15, at O. If one of the tires is allowed to come off, the cone will touch the rim of the wheel without a tire at A and A' and the outer wheel, on which the tire will remain, will contact as usual at B and B'. The radius of turning will be such as to introduce a serious hazard even if the speed on the car is not very high, unless the driver prevents the car from turning around on the circle whose axis is at O in Fig. 15, since the radius of the curve might be even below 20 feet, depending upon the sizes of tires used on the wheels.

It is interesting to note, then, anything which will tend to seriously reduce tires to the point likely to cause a "blowout," such as running on car tracks, as shown in Fig. 16. In this case it is plain to be seen that all the ingenuity in the world could not bring on a blowout any quicker. This section of rail is not used in modern streets in which the pavement is good, but it will be found in the sparse districts, just where the rolling may be had, and when the temptation to use the car tracks will be the greatest. In all cases the use of car tracks is to be looked upon as dangerous, even in the cases in which the rails are flat on the tread, for the reason that rails do not always remain in good order, and a knife-edge will soon make short work of the casings.

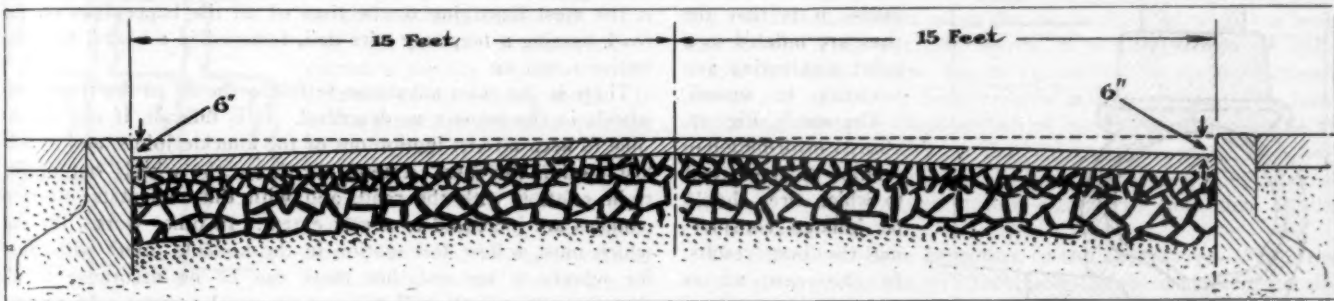


Fig. 12.—Cross-section of roadway showing effect of crown on turning.

per hour will be safe. Obviously, much depends upon the slope of the roadway at the point of turning, and if the slope is declining, provided the radius of turning is short, it is anything but safe to make the turn at a very high speed.

Traction Ability Declines Rapidly.—Since steering really depends upon the tractive ability of the wheels of a car, it is of interest to note that the traction decreases as speed increases, and on a curve, where the traction is the most needed, the in-wheel leaves the road if the radius of turning is short or if the speed is high. Fig. 14 shows something of what does happen, assuming in this case that the car is being viewed from the rear, and making a turn to the left. The in-wheel will leave the roadway at the point A, turning on the out-wheel as an axis at the point O, to the radius C, rotating in the direction as shown by the arrow. The wheel in contact with the roadway will tend to slide in the direction of the arrow B, and this wheel will have to afford all the tractive force.

The curves for speed on arcs of circles will hold true in all cases in which the radius of turning is not too short, but the performance as shown in Fig. 14 will defeat all the laws and render the going dangerous, unless it is on "banked" curves, when the in-wheel will tend to stay on the ground, affording some measure of the tractive ability excepting when the speed is higher than that allowed according to the curve of safe speed under such conditions. As a rule, skidding will intervene before the in-wheel will leave the ground, but a rut in the roadway or an obstruction in the way of skidding will introduce an accident.

Bursting Front Wheel Tires Dangerous.—In fast going, it generally happens that the bursting of tires, as in a "blow-out," results in danger to the occupants of the car, because the diameter of the wheel is less after the tire bursts, while the tire on the opposite side remains as before. The result is,

Tires Should Be Inflated Sufficiently.—In many automobiles the front tires are of smaller section than on the rear, primarily to afford a sufficient turning (canting) angle of the wheels, but there is a second reason bound up in the case with which the narrow tires will allow the steering wheel to cant the road wheels around. The difficulty in steering is accentuated if the tires are not properly inflated, while the wheels will bounce off of the roadbed if the pressure in the tires is excessive.

While it is true that the rear wheels should be inflated more than the front, because the load to be borne is more, the fact remains that the front tires should be stoutly inflated in order to

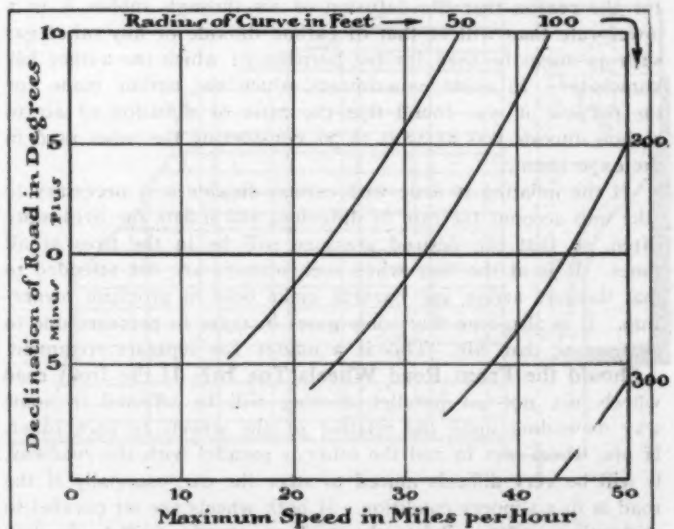


Fig. 13.—Effect of declination of roadway on turning speed of car.

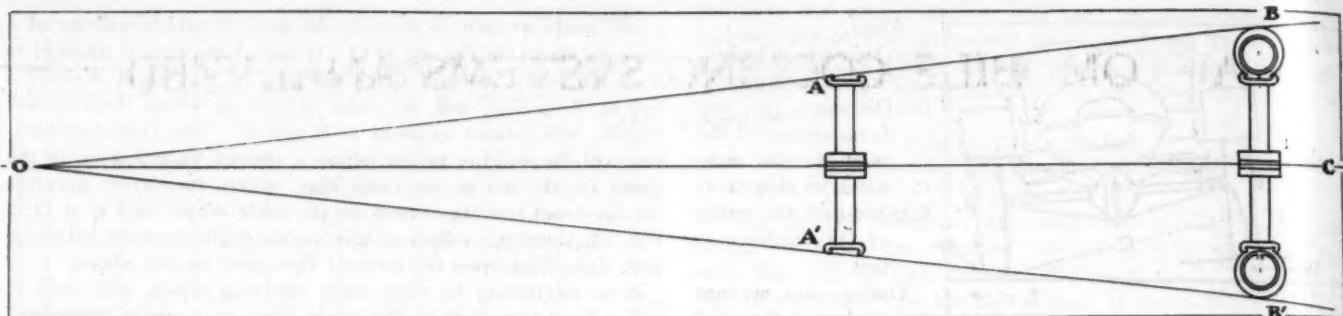


Fig. 15.—Diagram showing how to find turning radius with one tire off.

assure traction on a maximum basis, on the one hand, and to enable the wheel to cant easily on the other. The pressure per square inch at the point of contact of the tires will depend upon the weight on the wheels and the degree of inflation. If the tires are not well inflated they will squash down and the area will increase accordingly. In this case the pressure per square inch under the tires on the roadbed will be low, whereas if the tires are well inflated it is then that the pressure per square inch will increase accordingly, with the result that the adhesion

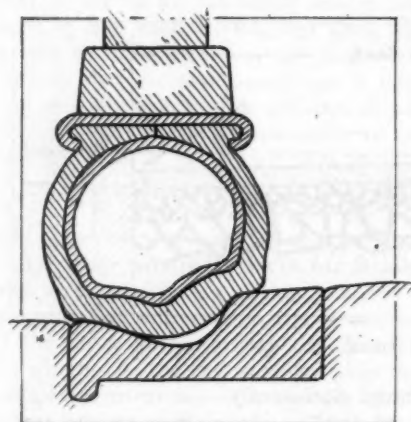


Fig. 16.—Section of tire when deformed by car track of this shape.

will be augmented, unless it is that the tires are inflated to a point eliminating any tendency to squash. The curve, Fig. 17, affords information in relation to the extent to which tires should be inflated considering the best results. In this case air is taken as the medium for the purpose, and it will be worth while to call attention to several details involving the use of other gas media besides air,

since the results are not the same in all cases. The curve, Fig. 17, shows that the pressure of the air increases as the tires heat up, as they will under the load, due to molecular work. Some inflating gases are more marked in this phenomenon, and it is important to take this into account. **Diffusion of Gases Depends Upon Composition.**—Air will stay in tires longer than any other gas used for the purpose, for the reason that the diffusion of air through rubber is at a lower rate than will be that of carbon dioxide or any other gas such as might be used for the purpose, of which the author has knowledge. In some experiments which the author made for the purpose it was found that the ratio of diffusion of air to carbon dioxide was as 12 is to 30, considering the tubes used in the experiment.

If the inflating is done with carbon dioxide it is necessary to take into account the rate of diffusion, and inflate the tires more often, so that the desired pressure will be in the tires at all times. It is at the time when such matters are not attended to that dangers arrive and hazards make bold to proclaim ownership. It is also true that some gases increase in pressure due to heat, more than air. This is a matter for separate treatment.

Should the Front Road Wheels Toe In?—If the front road wheels are not set parallel steering will be affected in some way depending upon the relation of the wheels to each other. If one wheel toes in and the other is parallel with the roadway, it will be very difficult indeed to steer the car, especially if the road is in a slippery condition. If both wheels are set parallel to each other, and parallel to the roadway, steering will be far less difficult, but it will still be far from perfect. One way to over-

come the troubles of steering as they come from the set of the front road wheels, is to have both wheels toe in.

The amount of the in-toeing should not exceed 1 degree from the center, for each of the wheels, but it is desirable to have the angle of the two wheels carefully adjusted, so that they will both toe in the same amount. This in-toe will cause slight wearing of the tread of the tires, but it is probable that the wear will not be so much as will follow if the wheels are not so adjusted since in the absence of this set of the wheels they will be more prone to skid, and it is a moral certainty that skidding is the most damaging to the tires of all the happenings on the road, barring a tenpenny wire nail, fastened in a board, with the business end up.

There is one other advantage to follow the set of the front road wheels in the manner as described. It is difficult, if not impossible to keep all lost motion out of the knuckle joints, and as this lost motion increases, it tends to throw the wheels out of the right relation with the road, and with this mal state, steering troubles are increased to a vast extent. In other words, the sag which must follow lost motion in the knuckle joints will cause the wheels to toe out, but there can be no assurance at all that the two wheels will toe out an equal amount. As against this, it is generally conceded that, if there must be a difference in the amount of the toe, it is better to have both wheels toe in, in any case, even if they do not hold to exactly the same angle. If the wheels toe in, and if in slowing down, with a view to coming to a stop, the power is not thrown off, skidding will not follow, even if the roadway is not so very good. The design of gasoline cars does not permit of leaving the power on, but in electric cars it is possible to allow the motor to stay in circuit, exerting some force. It is even possible with planetary gears to take advantage of this fact. A good deal depends upon the acumen of the driver when reference is had to difficult road work, and it is the height of folly for a new driver to trust to his lately acquired experience to guide him through dangerous channels due to speed-made tendencies in the absence of enough experience to assure a fair measure of automatic action.

(To be continued.)

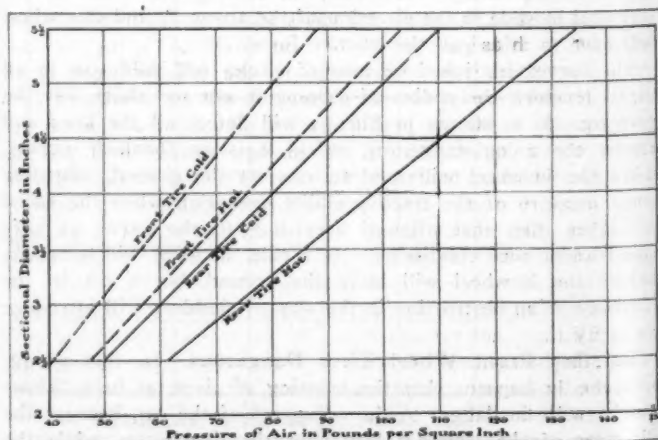


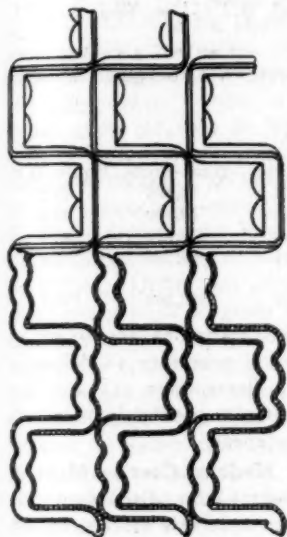
Fig. 17.—Showing initial and heat pressure in pneumatic tires.

AUTOMOBILE COOLING SYSTEMS ANALYZED

By MORRIS A. HALL.

THE cooling of a gasoline or other automobile engine may seem a simple thing to the uninitiated, but in reality it is far from that and it is a fact that the deeper one goes into it the more complex the situation becomes.

Speaking broadly, the cooling of internal combustion engines, in which category all automobile engines come, is divided into two classes according to whether the cooling medium is a liquid or a gas. This broad classification, when reduced to every-day language, gives us the air and water cooled genera. In the latter case, however, the one mentioned is but a single instance of many. That is, to complete the class, it would be necessary to mention also oil cooling and the use of other fluids. On the other hand, in the class of engines using a gas for the cooling media, the writer has never heard of the use of or any proposal or suggestion to use anything except air.



Method of Increasing Surface.

It will be well at the start to correct a popular notion as to the function of the cooling media. It is the general impression that the office of cooling substances is to abstract the heat from the gases within the cylinder, this heat having been generated by the explosion. The idea, as stated before, is an erroneous one, for, as a matter of fact, the duty of the cooling medium is to keep the cylinder

walls cool, and that only. These walls must be kept cool for two reasons: one is to permit of proper lubrication, without which the piston could not move up and down in the cylinder. Lubricants have a definite flash point, and when this temperature is reached they will burn and leave a carbon residue. In other words, then, the cylinder walls must be kept cool to prevent the carbonizing of the lubricating oil.

The second reason for cooling the cylinder walls is to prevent preignition. If the metal be allowed to heat up to red heat, for instance, the fuel will ignite during the compression stroke, previous to the completion of the stroke and thus cause the engine to reverse. Even if not occurring before the end of the stroke, this would cause firing at irregular intervals which could not be predetermined. Consequently, the power would be indeterminate and unreliable.

To go back to the first reason for cooling and the common, erroneous idea of the same, the gases within the cylinders should retain as much as possible of the heat produced by the combustion. Therefore, it is advisable to let the cylinder work at as high a temperature as the lubricating oil will stand without carbonizing. This fact is pertinently brought out by one of the makers of air coolers, who in his catalogue makes the following statement which is quoted verbatim: "The nearer the cylinder temperature of a gas engine can be kept to 350 deg. the better it works and the more efficient it is. In other words, a gas engine does its best work and gets the most power out of the gasoline at a wall temperature of about 350 deg."

With a temperature as high as this, the thermal efficiency is also very high, but the other side of the question lies concealed within the mechanical efficiency. This has no direct connection with the heat-cycle competence unless it be that it varies inversely with the latter. At any rate, it is certain that with temperatures such as this not only common, but the regular thing, it is certain that a tight or even close-fitting piston is impossible.

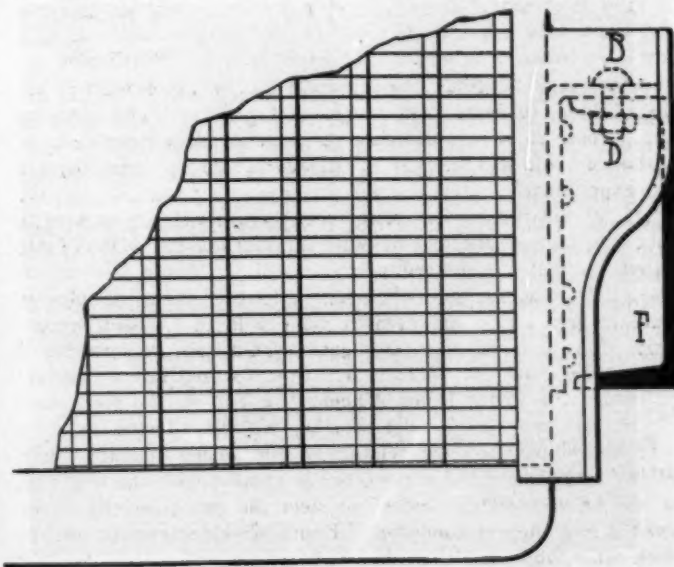
From this and other details which might be mentioned if space allowed, it is at once apparent that the mechanical efficiency is very low, indeed. The inference then is, to obtain the maximum heat efficiency a large sacrifice of mechanical efficiency must be made. Also, the reverse of this holds, that to get a high mechanical ability, heat efficiency must be sacrificed or a balance struck between the two. This is the course usually pursued.

Reliability the Most Important Factor.—In keeping the cylinder wall temperature high and close to the carbonizing point of the oil, care must be used not to overdo this for, in the last analysis, reliability is the desideratum and by attempting to do too much with the retention of heat within the mixture, this very desirable quantity will be lost. As this is the one factor which held the gasoline engine back for many years, it would be a serious matter to lose it now. This is a factor which the advocates of the simpler gas-cooling systems, in their reaching after simplicity, have lost sight of.

A point easily seen to be in favor of the more bulky, assuredly heavier and admittedly more complicated fluid systems with positive circulation, at once crops out in the light of what has been said above. This, put into words, is that regardless of bulk, weight and complication this, as exemplified by the pump circulated water system, is both reliable and consistent. The ratio of cooling substance to power which upon analysis is seen to be the desired quantity, is here obtained and here only. The positive assurance of this regular, unswerving ratio is worth a great deal and it is a question if it is not worth more than all the extra weight, bulk, etc.

The Relation of the Structure to the Efficiency.—While the bare statement that the structure, or to be more explicit, the design, has a positive relation to the efficiency and a direct bearing upon the results, is at first sight a strong one, the facts, upon close scrutiny, bear it out. It will not be denied that the temperature of the explosion, which is the influencing factor in the efficiency formula, is governed by the temperature of compression. This, in turn, is wholly dependant upon the pressure of compression, which is a fixed portion of the structure, or, in other words, is a predetermined part of the design.

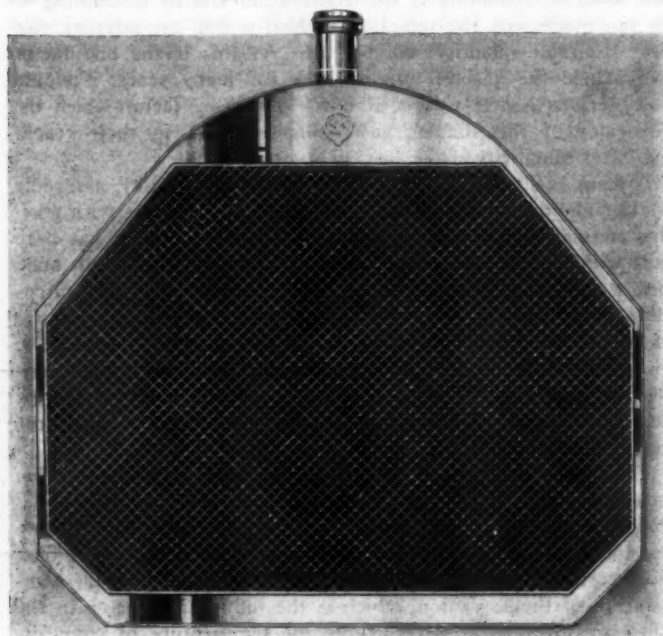
The effect of a high compression then is to increase the efficiency of the heat cycle. This may be done by reducing the size of the compression chamber and by increasing the stroke or otherwise. It is at once apparent that any increase in the initial temperature means a proportionate increase in the heat which



Method of Suspending Radiator from the Main Frame.

must be carried away and in the case of the decreased combustion chamber the difficulty of doing this is increased at the same time. From this it is obvious that an increase in efficiency must not be sought blindly else the results will not be satisfactory. An alternative method is to obtain the desired result by increasing the speed. With the gas-cooled method this is practically impossible, but for the liquid-cooling system, in which positive circulation is utilized, this is an excellent way, as with increased speed of the motor, comes increased speed of the cooling medium because the means of propagation bear a fixed ratio to the speed of the engine.

Heat Balance Expressed in Percentages.—To express the heat balance in a reasonable and easily understood manner, let us give it in proportion of the total heat, or in other words, in percentages of the possible heat which the gas is capable of producing. According to one well-known authority, whose fig-



A Neat Example of the So-called Mercedes Type.

ures on this subject have never been disproven and are therefore reliable, the average distribution of the heat energy of the fuel is:

TABLE 1.

Useful Work	17 per cent.
Loss to the Exhaust.....	16 per cent.
Carried off by Jacket Water.....	52 per cent.
Radiation, Conduction, etc.....	15 per cent.
Total.....	100 per cent.

This means, then, that of the total energy which the gas develops in the cylinder, only 17 per cent. goes to useful work as it results in speed, hill-climbing or other manifestations of ability. The other 83 per cent. is wasted in various ways, by far the largest and most important of which is the one we are here concerned with, the heat carried through the cylinder walls and then carried away by the cooling medium, 52 per cent. of the whole, as shown above.

Now to go deeper into this distribution of heat and in particular, into the amount carried by the jacket water, it will be necessary to go into the mathematics and give a few formulæ.

$$(1) \quad 1 \text{ Horsepower} = 33,000 \text{ foot-pounds per minute.}$$

$$(2) \quad 1 \text{ B.T.U.} = 778 \text{ foot-pounds.}$$

From the above, to reduce mechanical power to heat units, usually abbreviated B.T.U.,

$$(3) \quad \frac{\text{H.P.} \times 33,000}{778} = 42.42 \times \text{H.P.} = \text{B.T.U. per minute.}$$

This mechanical equivalent of power expressed in heat units

may be put in the more convenient form of units per hour by simply multiplying by sixty, or,

$$(4) \quad 2,545.2 \times \text{H.P.} = \text{B.T.U. per hour.}$$

Figures for a Selected Example.—If a 20-horsepower (20 H.P.) engine be selected to apply these figures to, multiplication by 20 gives the heat equivalent of this power as 50,904 B.T.U. per hour. The mechanical efficiency of the engine must be taken into account here so that a factor allowing for this loss must be introduced. This has been known to reach a figure of 90 per cent. or .90, but in calculations of this nature .80 is commonly used. Moreover, from this, the total heat content of the fuel is found by figuring backward from the resultant heat and the proportion of the whole as given above in Table 1, thus:

$$(5) \quad \frac{20 \times 2,545.2}{.90 \times .17} = 332,300 \text{ total B.T.U. in fuel.}$$

From this total the corresponding figures for the other divisions are readily obtained. These are:

TABLE 2.

Division.	Percent.	Heat-units.	Equiv. H.P.
Useful Work	17	56,300	22.2
Exhaust Loss	16	53,000	20.9
Jacket Water	52	173,000	68.0
Other Losses	15	50,000	19.6
Totals.....	100	332,300	130.7

It is then apparent that the losses are enormous, for, to get an actual delivered horsepower of 20, it is necessary to deliver a fuel with a latent content of over 130 horsepower. Of this, the extra 110 is not only unavoidable, but also absolutely necessary from the "nature of the beast," so to speak.

Jacket Water or Other Cooling Medium Carries Most of the Heat.—To return to the subject under discussion, the cooling medium, it is at once apparent that this must carry off an enormous percentage of the total loss. In the above typical case the amount to be disposed of in this manner is no less than 173,000 B.T.U. per hour. To carry through a rough calculation of the amount of fluid necessary to conduct this away let water be assumed as the medium, also let it be assumed that one B.T.U. is the heat necessary to raise 1 pound of water 1 deg., which is not absolutely correct, but simplifies the calculations. Then in a hypothetical case, the water is put in at 100 deg. and taken out at 200 deg., a rise of 100. Then to carry off 173,000 B.T.U. per hour will require

$$(6) \quad \frac{173,000}{100} = 1,730 \text{ lb. of water per hour} = 182 \text{ gal. per hr.}$$

In all fairness, it must be added that these figures are far from the actual. The water will seldom be allowed to reach 200 deg. for in some regions that would be boiling, and the lower limit seldom gets down to 100 for average continuous running. A more fair estimate, then, would just about double the above figures, which were chosen at random to show the method of figuring. The resultant figure is, then, 364 gallons per hour. Reducing this to amount per horsepower, to show the relative quantity to be used:

$$(7) \quad \frac{364}{20} = 18.2 \text{ gals. per H.P. per hour.}$$

This is an approximation, of course, for the mechanical efficiency was assumed, and if taken too high, lowering it would raise the total heat, and with it the heat of the jacket. The increase in the latter will increase the weight or quantity of the cooling water, so it is usual to select such a figure as will give an excess. This is not allowed to keep the cylinders cold, but is circulated slower to compensate for the excess quantity. It is in this connection that the type and mechanical efficiency of the pump used enter into the problem.

(To be continued.)

HOW THE NOVICE GETS HIS INSTRUCTION

SPECIALIZATION in automobile instruction to meet the needs of owners and prospective owners of special types of cars is the latest improvement introduced into its course of study by the automobile school of the West Side Young Men's Christian Association of New York City. Under this plan, while every pupil is given a thorough course in general automobile operation and repair designed to fit a man to be chauffeur of any type of machine, an owner who wishes to become absolute master of his own car, as well as the possessor of it, may elect to have special instruction which will train him to get the maximum road results out of his car and also to make on the road all ordinary repairs not requiring a machine shop.

That the new plan is decidedly popular is evidenced by the fact that when the school opened for the January term of 1909, a class of 100 students was enrolled, two of whom came from as far as Mississippi and another from Canada to enter.

The plan as outlined would require the services of far more cars than could either be purchased or borrowed, while it would be impracticable to try to get a car just for the occasion from the New York agents when an owner of that make turned up. Inasmuch as the entire fees charged are used to increase the general Y. M. C. A. revenues, it was equally impossible to purchase the various machines.



A number of the manufacturers, realizing the part which this non-commercial school plays in the development of automobiling by training men thoroughly and at a moderate fee, are aiding the officers of the Y. M. C. A. school by donations of cars and models. The Haynes company has recently given a fully equipped four-cylinder touring car, the Ford interests have promised to do likewise, and other makers have accepted the Association's invitations to inspect its work and have shown their interest by donating equipment.

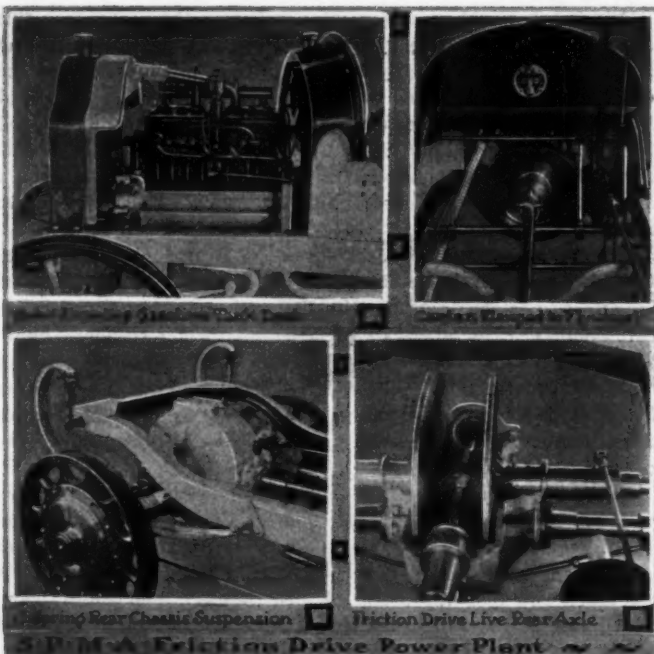
Makers of automobile accessories have also appreciated the value of a good, reliable course of instruction and have aided in the effort to establish an experimental and practical laboratory of automobile devices where its present and former students, numbering nearly 3,000, can study and work with new inventions or types of construction. The gift of Eisemann magnetos from Lavalette & Co., of New York, and a 7-horsepower gas engine from the Bridgeport Motor Company has been much appreciated by the students.

The same plan of instruction that has been followed in the past will be continued this year in all classes of instruction, that of giving all students a thorough mechanical knowledge of motors, and other parts of the chassis in the shops before they are taken out upon the roads. When they are well able to care for a car in case of road trouble competent instructors, one teacher to each student, will take cars out and give lessons in road and street operation, both in the country and on city streets, where traffic practice can be obtained.

A great deal of interest in the conduct of the courses was shown at the Grand Central Palace show, where a booth was donated by the management, and it was there that the attention of certain manufacturers was secured. It has been discovered by some makers that the courses given frequently lead to sales, principally because of the makes of cars used in instruction, a fact that occurs simply because the Association was fortunate in securing these.

The election to the advisory board of the school of Alfred Reeves, general manager of the American Motor Car Manufacturers' Association, has been pleasing to school's friends.





PARIS, March 3.—Friction-driven cars are not a French feature, there being but one firm, to our knowledge, having devoted attention to a type of vehicle so well known in the States. There is a newcomer in the field, however, who has produced a friction-driven car on new and original lines. Robert Dubois, the inventor of the S. P. M. A. automobile, a Parisian production, carries his classical four-cylinder engine forward under a bonnet, has a universal behind the flywheel, and proceeds direct to the rear axle by one long propeller shaft squared for its entire length. Mounted near the extremity of the shaft is a solid-steel drum which can be moved backward and forward in the same way as a sliding-gear set, and by exactly the same means, namely, a side lever and notched sector. The shaft passes completely through the rear axle housing, and is carried in large bearing at each end. Within the housing, and flanking the steel drum on the propeller shaft, are two friction plates bolted to the extremity of each of the two halves of the live axle. The necessary friction is obtained by means of coil springs contained within the axle casing, and contracted by an eccentric with connecting bars linking up to the clutch pedal. As will be readily seen, the operation of gear changing is, so far as the driver is concerned, the same as on nine-tenths of modern cars: depression of the clutch pedal, with the consequential separating of the two disks, and, by means of the side lever, the shifting of the driving drum along its shaft so that it will come in contact with a different horizontal diameter of the friction pulleys. The operation is the same as the one on cars with sliding gears with the advantage of not requiring any skill to cause the gears to mesh.

There are five forward speeds, one reverse, and of course a neutral position. This latter is obtained by bringing the driving drum in the horizontal line of the driving axles, which, being hollow at this point, leave nothing for the drum to work upon. Advantages claimed for the system are increased frictional surface, and, in consequence, decreased loss of power; also added simplicity by reason of a backward and forward movement of the driving pulley only, without any need for the pivoting shaft generally used on friction-driven cars. The friction plates are contained in an aluminum housing, which has the appearance of an unnecessarily large differential housing. It has inspection plates at the top and at the rear, and in addition the upper half of the housing can be removed in one unit by the withdrawal of a few bolts.

The objection will at once be raised that a drum mounted on the end of the propeller shaft and driving friction disks to left and right of it will turn the road wheels in opposite directions.

JUST OUT OF THE SHOPS ABROAD

By W. F. Bradley

Obviously such would be the case if provision were not made to avoid it. The weight of the car is carried on dead axles, the drive being through the live axles, the inner end of each one carrying the friction pulley and the outer end a pinion meshing with an internal gear contained within enclosed drums on the road wheels. With such a system it is a simple matter to interpose a pinion which will transform the reverse movement into a forward one with the same gearing as that of the opposite directly driven wheel.

And the differential? it will be asked. There is none. Theoretically, with the coil springs in proper condition, the two which should be driven at the same rate, and turning should be a difficult matter at speed. In practice, however, it is found that such is not the case, and although the inventor is not in a position to explain why it is so, the fact remains that there is sufficient slip on the plate connected up to the wheel on the inside of the curve to allow any turn to be made at high speed with the same ease as on a differential car. As a proof of its ability to pull under a load and on a heavy grade the car was taken to the top of Montmartre, where, on a 13-per-cent. grade that rarely sees any vehicle, several stops and starts were made with full complement of passengers on board. The car making the demonstration had been in constant use for twelve months. Some portion of the success of the car in this respect is undoubtedly due to the metals employed for the driving drum and the friction disks, the nature of which it is not desired to make public at present.

A reduction of weight is obviously one of the greatest advantages of this system, for at one end of the chassis is an ordinary engine, and at the other a rear axle weighing less than the same organ on the average shaft-driven car. Between the two is a propeller shaft and four steel ties, connecting up to the brakes and the springs. The total weight of the chassis, in complete condition is declared to be 1,210 pounds. The engine has a bore of 75 and a stroke of 110 millimeters, which gives a nominal rating of 14 horsepower. There has been no attempt to depart from standard lines of construction. A detail feature, however, is that petrol and oil tanks are on the forward face of the dashboard, the only thing in connection with the running of the engine that is to the rear of the dashboard being a single sightfeed and switch combined.

Suspension at the front is by semi-elliptics, but at the rear a special type of C spring is employed, the feature of which is that the tension can be altered with a few turns of a wrench in order to suit heavy or light bodies.

A NEW WATERPROOF MAGNETO COVER.

PARIS, March 10.—Little attention has been paid to the protection of the magnetic machine which supplies the indispensable spark to the cylinders of an automobile engine. The car bonnet is generally considered sufficient to keep off the worst enemy—wet; but the inadequacy of this is shown by the number of careful drivers who during the wet season cover the bonnet with an efficient waterproof. For marine work some protection is absolutely necessary, especially on racing craft, that necessarily ship a certain amount of water at high speeds, some of which finds its way into the engine room. More than one breakdown at Monaco has been due to no other cause whatever than the magneto receiving a drenching from flying spray.

This drawback has been entirely removed by the Bosch company by the recent production of a metal magneto cover, which is guaranteed to be absolutely waterproof. There is nothing

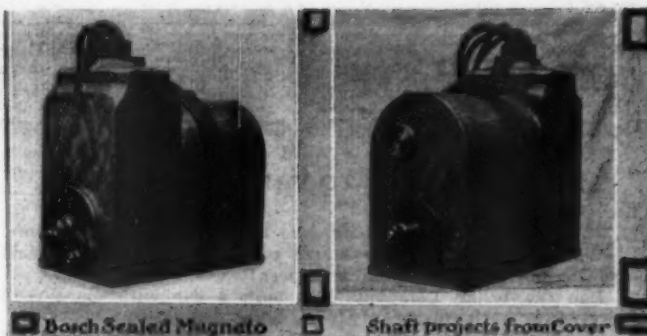
in common with this, cover and the canvas and rubber ones which have been put on the market, which certainly protected the magneto from flying spray, but were powerless to prevent the penetration of water if poured on in a volume. It is a hammered brass case which is employed, with but a single welded seam. The case fits closely onto the magneto platform, which is provided with a raised waterproof beading, the only projections being the driving shaft at one end and the timing lever at the other. The encircling metal band securing the magneto to its platform is here on the outside of the case, and is secured in the usual way, as will be seen from the illustration.

A separate cover is provided for the contact plugs, this being bolted down to the main portion of the casing. The insulated leads all pass to the inside of the cover through one opening, which has also been made watertight. As oil holes are provided on the casing, it should never be necessary to dismount this latter except when it is required to entirely dismount the magneto. The firing of the cylinders can be verified by withdrawing the two bolts holding the cap in position, and without in any way interfering with the general body of the magneto. As this verification is far from being a daily occurrence, automobilists will not object to the removal of two bolts when it becomes necessary. The advantages of such a cover are so obvious that it is safe to predict its general use not only for open motor boats, but on all well-equipped cars.

FEATURES OF NEW AIR PROPELLER BRAKE.

PARIS, March 10.—Braking generally consists of the friction of a moving part on a fixed portion of the machinery, a system that has in its favor simplicity and ease of application, and general efficiency where the braking effort is intermittent. Where the retarding influence has to be continued without intermission for a long period, as often happens on good surface mountain roads, the friction sets up so much heat that the brake rapidly becomes inefficient. It was the development of automobilism on perfect European mountain roads, with grades of five to ten per cent. for several miles, that drew attention to water-cooled brakes, now so common on big cars, and the use of the engine as a retarder.

A device has just been produced by the Peugeot firm by which an aerial propeller carried under the car is made to retard the vehicle without any possibility of heating and consequent inefficiency through prolonged application. The propeller, composed of two flat steel blades, is mounted at the end of a vertical shaft, the housing of which is attached to one of the cross members of the frame to the rear of the engine. The housing is stiffened by stout rods passing from its base to another cross-frame member further in the rear. The Peugeot truck on which this system has been fitted has a final drive by double side chains, the gearset being combined with the differential on the countershaft. From the gearset a horizontal propeller shaft is carried forward and attacks the vertical propeller shaft by means of bevel gearing. Thus, on the vehicle being in motion, the

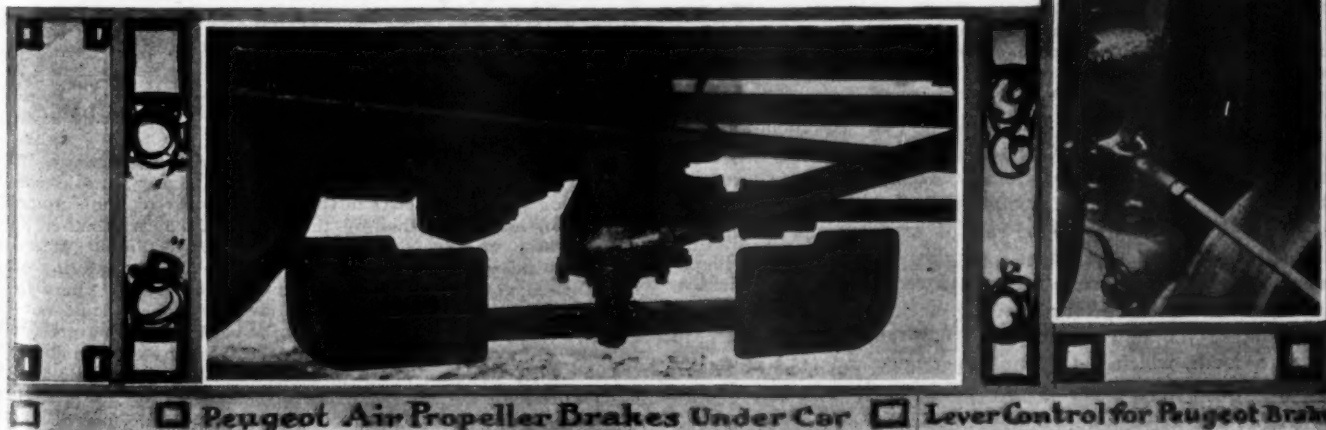


Bosch Sealed Magneto

Shaft projects from Cover

aerial propeller is driven from the road wheels through the gearset and the propeller shaft. Provision is, of course, made for engaging or disengaging the propeller at will by means of a special lever on the dashboard. The gearset through which the car is driven is employed for driving the propeller, which, of course, profits by the different ratios, the driver being able to increase or decrease the speed of the propeller in relation to that of the vehicle by a simple change of gear. With the propeller running on its high gear a very powerful retarding influence is created as the result of the resistance of the air on the revolving blades.

A test of the system was recently made from the top of Mont Valerien, a hill overlooking Paris to the banks of the river Seine. The engine was stopped and the vehicle, a commercial truck with a load of 3 1-2 tons, was allowed to run down. The total distance of about two miles was covered at a speed of slightly less than three miles an hour, without the driver on any occasion touching his ordinary set of brakes. It is intended to continue the experiments and produce a model in which the propeller, instead of obtaining its resistance from the air, will revolve in a liquid, either water or glycerine. At present the brake is only applied to the company's heavy commercial vehicles, but will doubtless be fitted later to the larger touring cars. There is one other advantage to be taken into account in connection with brakes which receive their "purchase" by way of opposition in the air—i.e., it does not matter at all if the wheels lose their tractive ability, since the "fan" brakes would still be in a position to work, regardless of the tractive ability of the road wheels. Indeed, the car, fitted out in this fashion, could be controlled even if the wheels might slip, so that the conventional brakes would fail to work, due to loss of traction on a grade.



Peugeot Air Propeller Brakes Under Car

Lever Control for Peugeot Brake

Letters Interesting and Instructive

SOME QUERIES AS TO VARIOUS RECORDS.

Editor THE AUTOMOBILE:

- [1,790.]—Will you kindly answer the following questions for me:
1. What automobile, either steam or gasoline, has the fastest record for one, two, five, ten and twenty-five miles?
 2. Has the White Company ever built a car with more than 30-horsepower until this year? If so, when and where?
 3. Has the White steamer ever been defeated in any hill climb? If so, by what car and what was the time and distance?
 4. What is the record of the Buick car for one, two and five miles?

FRED T. TREMBLE.

Saranac Lake, N. Y.

1. The following records for 1, 2, 5 and 10 miles were made in 1906, on the beach at Ormond, Florida: One mile—Marriott, Stanley steamer, 0:28 1-5; two miles—Demogeot, 200-horsepower Darracq, 0:58 2-5; five miles—Hemery, 200-horsepower Darracq, 2:34; ten miles—MacDonald, 90-horsepower Napier, 6:15. The record for 25 miles is that made on the Fresno track by Barney Oldfield, in a 60-horsepower Peerless, and is 23:38 3-5. The straightaway record for that distance is not listed.

2. The White Company has never built a stock model of more than 30-horsepower until this year.

3. Your question is too general and the field too great to allow of our giving an accurate answer.

4. It would probably be advisable to communicate with the manufacturers of this car to secure a satisfactory answer.

THE CARE OF AN AUTOMOBILE BODY.

Editor THE AUTOMOBILE:

[1,791.]—Please be good enough to answer in your "Letters Interesting and Instructive" the following: In the summer time the body of a car is oftentimes merely dusty, and a good dust-off would make it look as good as ever, if only you could pick the dust off clean, but a dry duster, although picking up the most, still spreads a certain amount, making it necessary to go all over again with another cloth to make a perfect job. Is there not some simple thing that I can dampen my cloth with that will pick the dust up clean, not hurt the finish, nor leave it greasy or sticky?

J. D.

Portland, Ore.

A highly finished body should never be wiped off dry, as it is impossible to do this and not scratch the polished surface. The best and quickest way is to turn a hose on it and then while still wet wipe off with a piece of chamois or a soft cloth. Waste might be used if of a selected grade, but the ordinary cheap kind must never be utilized, as it contains small sticks and other hard substances which will scratch the varnish. There are many cleaning substances now made, and by consulting the advertising pages of THE AUTOMOBILE you will doubtless find one that will suit you.

THE RECORD TIME ON A STRAIGHTAWAY.

Editor THE AUTOMOBILE:

[1,792.]—Kindly tell me in "Letters Interesting and Instructive" the greatest speed ever maintained by an automobile on a straightaway and also the name of the car.

L. E. HOWE.

Liberty, Ind.

The greatest speed ever attained by an automobile on a straightaway was made at Ormond Beach, Fla., on Jan. 26, 1906, by Fred Marriott, driving a Stanley steamer. On this occasion he did the mile in 28 1-5 seconds and the kilometer in 18 2-5 seconds. The former is at the rate of 127.6 miles per hour, and the latter 121.6 miles per hour. At this same place and on the same day Louis Chevrolet, driving a 200-horsepower Darracq, made the fastest times for a gasoline machine on a straightaway. He covered the mile in 30 3-5 seconds and the kilometer in 19 2-5 seconds, which is 117.6 miles per hour and 115.3 miles per hour, respectively. Four days later, driving the same car, Demogeot drove two miles in 58 2-5, at the rate of 123.3 m.p.h.

ENGINE PERSISTS IN OVERHEATING.

Editor THE AUTOMOBILE:

[1,793.]—Having observed in your issue of February 4 a letter signed P. O. Peterson, in which he complains of his air-cooled car at times running hot, and your reply to same, would say I ran an air-cooled car of popular make (1906 model) for two years with fair satisfaction, sufficient to warrant the purchase of a 1908 model of same make last Summer. This car has proved unsatisfactory as it has been impossible to run it on even moderately warm days without constant overheating of the engine. As I ran an air-cooled car successfully for two years, I feel certain this is no case of retarded spark, lack of adequate supply of a suitable grade of lubricating oil, or of too rich a mixture, and if Mr. Peterson's car is of the same model as mine, probably nothing short of a more powerful engine capable of carrying a fan will suffice to keep his motor cool on warm days.

Chelsea, Mass.

DR. C. N. CUTLER.

Your engine is powerful enough to run a fan, as very little power is consumed in this manner, but that is not your trouble. It appears from the symptoms that your valves may not be correctly timed so as to exhaust at the proper time, for instance. Again, there is the bare possibility that you have an unusually stiff set of piston rings, which are absorbing lots of power. After you have fitted a fan, if it does not relieve the situation, you might follow up these suggestions. If you had not previously driven an air-cooler, we would make the suggestion that the makers of these recommend a hot running condition, the Franklin Company, for instance, recommending 350 degrees.

BEARING METAL IN AUTOMOBILE MOTORS.

Editor THE AUTOMOBILE:

[1,794.]—Can you tell me what kind of metal is used in the large ends of the connecting rod bearings in so many automobile engines? I have melted some of the scrap metal and it melts in a ladle like babbitt, but at somewhat higher heat and after poured requires longer to chill and harden than babbitt metal does. If you can tell me what this metal is and where I can obtain it, it will be appreciated.

East McKeesport, Pa.

J. D. F.

In many cases the metal used is of the copper-tin alloy in which the tin content is 90 per cent. This metal is quite hard, melts at a high temperature, relatively, and requires some skill in the fabricating process. In its use the results are not always good for the reason that the "teeming" is done at too low a temperature. In pouring this metal in the process of fashioning bearings it is necessary to raise the metal to a red heat. It should be covered with charcoal to keep it from oxidizing.

In some cases it is the practice to take a good grade of babbitt, such as can be had on the open market, and after melting the same in a pot, it is loaded with tin until a specimen, after it solidifies, will fracture readily, showing a cold-short condition. Very good results have been realized in this way, although it is true that the copper-tin metal as previously discussed has the advantage of being the more certain.

A GOOD CHANCE FOR GENIUS TO CLIMB.

Editor THE AUTOMOBILE:

[1,795.]—I would like to be informed through the columns of "The Automobile," or otherwise, whether there is any signal code in use among the best autolists in the country, whereby one automobile driver can inform another by the use of his horn whether he is going to stop, or start, or turn to the right or to the left, etc. Also please tell me what is the proper use of the horn in saluting other machines if you chance to meet one on the road. If there is no signal code for the purposes that I have mentioned, could not the one used by steamboats on the ocean be used for this purpose, with perhaps a few alterations, and if so, will you have the kindness to tell me what that is. There does not seem to be any rule for the use of the horn around here; they all toot away one, two or three blasts. That seems to mean, if they mean anything, look out or get

out, or something of that kind. I am going ahead, or going to stop, or going to turn to the right or to the left, or turn around, or do any other old thing that comes into my head to do. I am satisfied from my own experience that the knowledge and use of a signal code would prevent many accidents and do away with much inconvenience, not only to pedestrians, but to horse drivers as well, who would soon learn the meaning of these signals if they were in common use. For instance, I am driving down a road that crosses another road and I want to turn into the left hand road at the point of the crossing. I, of course, slow up in order to make the turn safely, when another machine that has been following me rather closely, but unobserved by me, seeing me slow up, understands it to mean that I give them an invitation to pass me and they make a dash to do so, and before they find out their mistake a collision results.

Columbus, Ga.

A SUBSCRIBER.

There are no very well understood signals in use; it would be a good chance for you to exercise your talents. The pages of THE AUTOMOBILE will be open to your suggestions.

ELECTRICAL INVENTION SEEMS IMPOSSIBLE.

Editor THE AUTOMOBILE:

[1,796.]—Being much interested in an article entitled "Here's Another Wonderful Invention," on page 322 of your issue of February 18, I wrote the firm named J. W. York & Son, and was greatly surprised to receive in return my letter of inquiry (which I enclose) upon which was written, "we know nothing in regard to the above."

The invention is so utterly opposed to modern knowledge of the generation of electric currents that it has awakened a great deal of interest, and the fact alone of its appearing in your columns gave it greater prominence, and stamped it with greater reliability than would have been the case had it appeared in some other journals more inclined to the sensational. Your valued paper would confer a favor upon its readers if it would give the correct names of the parties directly interested, and any further information it can secure in relation to the matter.

New York City.

A. D. WELCH.

One more look at the item as it appeared in THE AUTOMOBILE will disclose to you the fact that it was not regarded as likely to be true. The item came in as "news" and was given space more by way of showing odd slants of the human mind than anything else.

MAXIM'S SILENCER IS A MUFFLER.

Editor THE AUTOMOBILE:

[1,797.]—Maxim's noiseless gun is exciting much interest from a military standpoint.

1. Do you believe this principle could be applied as a muffler of an automobile?

2. If so, would it eliminate back pressure, or would it cause back pressure?

3. Would the possibility of muffler explosions be eliminated?

Tiffin, O.

L. O. R.

The principle of the "silencer" is that represented in the muffler as used in automobile work. Back-pressure will follow if the principle is not rightly applied. "Muffler shots" are due to missing in the firing of the charge in one or more of the cylinders. If timing is right, and if the ignition is adequate, provided the mixture is homogenous, and in the right proportion of fuel to air, there should be no trouble of this sort.

GREATEST NUMBER OF AUTOMOBILES.

Editor THE AUTOMOBILE:

[1,798.]—Will you tell me, to settle an argument, what city or town has the greatest percentage of automobiles relative to its population and what that percentage is? Thanking you for the trouble,

Tekonsha, Mich.

C. Q. D.

The information necessary to answer your question is not available; in fact, we have never seen or heard of anything of the sort. We can, however, give you a few of the places which have claimed this honor. These are: Waukesha, Wis., one in 220; Decatur, Ill., 170 machines for 30,000 people, which is one in 176; Hart, Mich., 35 for 1,600, that is one in 45, and Tahoka, Tex., with 14 among 500 people. This latter is one automobile for every 35.6 population. London, the largest city in the world, with over 4,500,000 population, has the tremendous total of 40,000 cars, bringing the average there up to one for each 112 people.

MIXED BEVERAGES FOR THE MOTOR.

Editor THE AUTOMOBILE:

[1,799.]—Do you recommend the practice of mixing lubricating oil with gasoline for the purpose of assisting in lubrication of cylinders, pistons, valves, etc., in conjunction with the splash system; and if so, in what proportions should the oil and gasoline be mixed? Does this practice not interfere with carburetion?

Philadelphia, Pa.

J. R. K.

The views of a "pioneer" will be found in this week's letters in relation to this matter. Perhaps others will come forward with a quota rather with the expectation that the scheme will be put on a stable footing.

ABSORPTION DYNAMOMETERS IN DEMAND.

Editor THE AUTOMOBILE:

[1,800.]—We will appreciate it if you will put us in touch with the makers of water absorption dynamometers.

Hope Valley, R. I.

N. & L. M. CO.

Several inquiries of a like character would seem to indicate that there is quite some activity in this line. Makers of this class of dynamometers can have information forwarded to the interested parties by addressing the same to this letter number, care THE AUTOMOBILE.

SOME REFLECTIONS OF A PIONEER.

Editor THE AUTOMOBILE:

[1,801.]—Your reply to Mr. Hawkins in the February 11th issue regarding the use of gasoline and lubricating oil mixed, seems to me as likely to do injustice to a splendid method of lubrication.

While, as you state, a mixture of gasoline with oil is not considered a lubricant, it is a fact that the gasoline is a splendid vehicle for carrying the oil to the place where needed in the proper quantity and at the proper rate. Mr. Hawkins has used it temporarily and regards it as a makeshift, but many people are using it regularly. Holsman oils his latest design of four-cycle engine that way, which he can well do, because, in this case, he draws the mixture into the crank case, and so brings the oil into contact with the parts to be oiled, just as is done in the Duryea buggyaut two-cycle engine, and in many others of this type. The cycle of the engine does make a difference, for in the usual form of four-cycle engine the mixture does not get into the crank case, and so will not oil the parts there.

An amount of oil in the proportion of one to twenty, or, even one to forty, is mixed with the gasoline, and dissolves fully therein, so that the mixture flows through chamols and through the carburetor, just as does gasoline alone. The gasoline evaporates and leaves the oil floating as an exceedingly fine mist. This deposits on all the parts that it comes in contact with and lubricates just as well as if deposited by some other means. Such of it as does not deposit (which I believe to be very little) goes into the cylinders and burns in the intense heat of the explosion. The deposit on the spark plug and heads of the cylinders seems to be less by this method of oiling than by the more common methods. The quantity of oil required is not excessive. In fact, I consider it less than most methods require. If the engine backfires into the case, the mist of oil is burned and the piston falls to be oiled. This is a fault, but the feeding of oil when wanted, and in quantities proportionate to the work done, is such a good feature that we can afford to fight the one fault by screening the transfer passage so the engine will not backfire.

Everybody admits the advantage of simplicity and the substitution of this simple method for the usual complicated positive oilers, with better results, is certainly a move in the right direction, and not to be considered a "makeshift method." It must be remembered that the gasoline does not do the lubricating by this method any more than it does when the explosive charge is admitted into the crankcase with some other method of feeding. In a number of instances the oil is dropped into the supply pipe, but this renders it necessary to bother with the adjustment of the oiler, and is not so good a method. A drip oiler feeds in proportion to the time, and does not take account of the revolutions or of the work done. A pump oiler feeds in proportion to the number of revolutions, but the solution method feeds in proportion to the power produced, whether this is in hard pulling at slow speeds with full throttle, or in light work, but with engine racing. It does away with worries about filling the oiler, for one mixes the oil with the gasoline when his supply tank at the garage is filled, and thereafter the filling of the fuel tank of the vehicle takes care of the oiling. It may interest users of the four-cycle engine to know that a little oil with the gasoline will often improve the running of their engines. It lubricates the cylinder walls at the top of the stroke where they are too often dry, and so adds to smooth running, noiselessness, and increases power.

Reading, Pa.

CHAS. E. DURYEA.

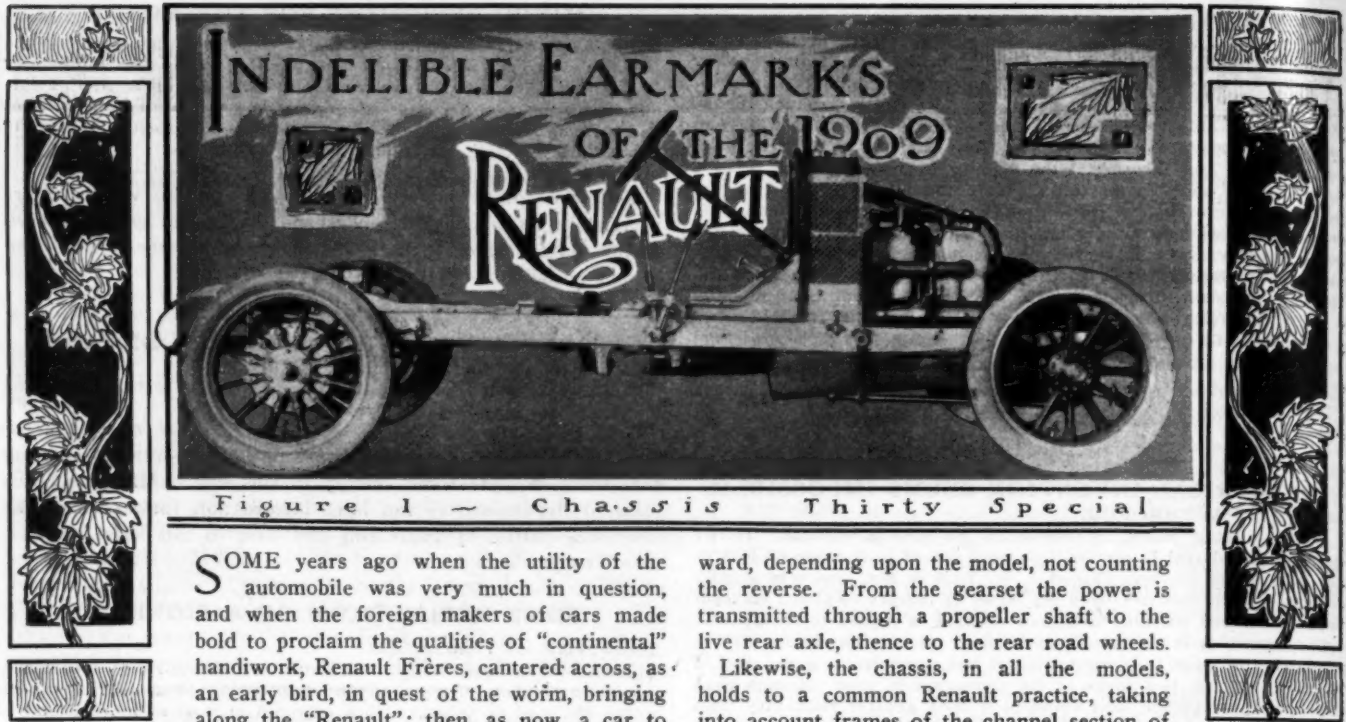


Figure 1 — Chassis Thirty Special

SOME years ago when the utility of the automobile was very much in question, and when the foreign makers of cars made bold to proclaim the qualities of "continental" handiwork, Renault Frères, cantered across, as an early bird, in quest of the worm, bringing along the "Renault"; then, as now, a car to be picked out of a parkful. It is just

this detail which has done much to make the Renault car popular, among the buyers of the better class of automobiles. The car has the Renault earmarks, and they are indelible in stability and style of design.

Then, as an importer of automobiles the Renault Frères selling Branch, located at 1776 Broadway, New York City, considered well the American methods, which are so necessary to continued success in this country, and American roads, which are but slightly improved in many places, hence demanding the utmost rigidity of the component parts of cars, coupled with a flexibility of the units, such as can only follow if the design is keen, and if the material is superior.

While it is true that the Renault holds to a certain characteristic design, it is also true that the car has kept pace with time, as experience showed the way to superior materials, and more lucid details in point of design. The Renault, for 1909, embodies all the features, free from frills, such as can be looked upon as fitting in the culmination of the automobile, in view of half a decade of activity of the most strenuous order.

All Alike in the Main Characteristics.—Since all Renault models, of which there are some 17, are as like as peas in a pod, in all the main essentials, it is just possible that the discussion here will be the more comprehensive if it is somewhat restrained, and with this end in view reference may be had to the chassis, Fig. 1, showing to good advantage the general arrangement of the cars, in which the motor is of the four-cylinder type, with vertical cylinders, and the motor is located in the front of the chassis. The power is transmitted by means of a cone clutch, leather faced, to a semi-progressive transmission gear-set, with three and four speeds for-

ward, depending upon the model, not counting the reverse. From the gearset the power is transmitted through a propeller shaft to the live rear axle, thence to the rear road wheels.

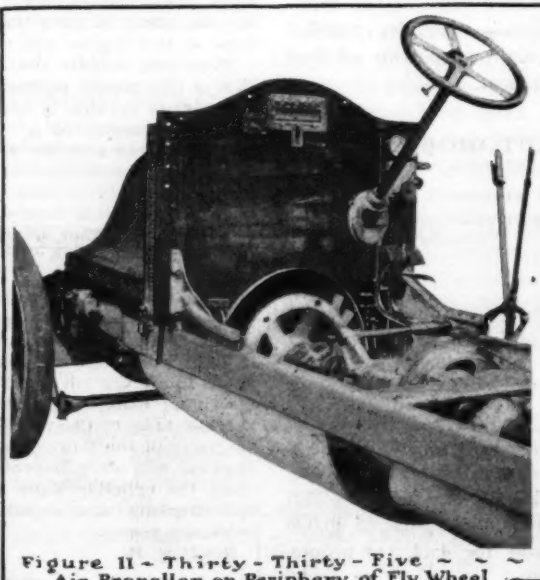
Likewise, the chassis, in all the models, holds to a common Renault practice, taking into account frames of the channel section of a "super" grade of steel, and with dimensions of the section, such as will afford the requisite degree of rigidity. The frame is of the "drop" type, on certain models, which lowers the center of gravity and makes the side entrance easy, and the spring suspension is with 3-4 elliptic rear members of nice design, while the front springs are half-elliptic, designed for level platform work despite road inequalities of moment.

In this spring suspension account was taken of the constant load in front and the variable nature of the load in the rear, hence the rear springs are free, thus accounting for well defined flexibility in the performance of the springs. In order, however, to assure just the performance which is characteristic of Renault cars on the road, shock absorbers, of a most effective design, and of superior materials, are provided in the manner as shown in Fig. 3, and a glance at the details of design will disclose the perfect universal action of the devices used.

From the springs through the axles to the road wheels, the power of the motor is rendered potent, and by way of axles to sustain in service, the front is of the I section, of great strength, and with integral spring perches. The live rear axle is of tubular form, in which the housing over the bevel drive and the

compensating gear is of great strength, in view of its shape, which does not prevent it from being light, and it is in this way capable of doing work without introducing complication, if the speed of the car is high.

Wheels, Wheelbase and Control Systems.—The rear road wheels are in driving relation with the differential shafts, which in turn take their power from the compensating gears, and the road wheels are so attached that none of the bending moments are transmitted through the shafts; the tube, which serves for the shaft housing, is designed to take all such strains. The wheels are of

Figure 2 — Thirty - Thirty - Five —
Air Propeller on Periphery of Fly Wheel

the most approved design in all respects, and the tires adopted on the several models take into account the load and speed to an adequate degree.

Motion is controlled by means of two very powerful brakes, acting on the back wheel hubs and on the differential. These brakes are entirely metallic, and hold equally well backward and forward. The brake acting on the wheel hubs consists of two drums made in one for the wheels, and in the interior of which are cast-iron segments which expand internally against the drums. The expansion of these brake liners against the drums is obtained by rotation of a finger-shaped cam.

These wheel brakes are controlled by a hand-lever placed at the side of the change speed lever at the right hand of the driver. This lever moves on a notched sector, allowing one to leave the brake on or off, whichever position may be desired.

The brake level is joined up to that of the cam, which expands the segments by a steel rod. The adjustment of the brakes is very easy. The brake working through the differential is worked by a pedal. This brake is operated in the same manner as those on the back wheels—expanding cast-steel segments—and is very gradual in its action and easily operated.

Renault chasses are fitted with three push pedals; that on the left hand works the clutch, the middle one the brake, or clutch and brake if desired; the third, on the right, is the accelerator pedal.

The steering is irreversible, and is of the helicoidal type, which is effected by an endless screw. It is very easy, and does not in the least tire the driver, the road shocks not being transferred to him. The movement of the steering wheel is transversal to the wheels by means of a revolving arm fitted on a sector and helicoidal grooved shaft, secured by a ball socket jointed rod to the levers working the wheels.

The wheels are mounted on the journals, which are thus jointed in their sockets to the front axle. In addition, on to the journals are fitted levers, holding between them a connecting rod, by means of which the two wheels are kept parallel one with the other. When the levers are fitted to the journals, there are large tapered squares. This arrangement gives the greatest possible rigidity by entirely avoiding all the shock or rattling of joints and escaping all fear of breakage.

Self-starting Device Makes for Utility.—In special cases the Renault cars, notably the 20, 30, 35, and 50-horsepower models, are fitted with self-starters, of a type in which compressed air is distributed to the cylinders at the propitious time. The same compressed air can be used for the purpose of inflating the tires. This self-starter idea is very reliable, and it is of particular advantage in the cases in which the owner prefers to run his own car betimes. Then it is the more sure way of starting, which is something to take into account these days when gasoline is not up to the high standard of former times, thus making "cold" starting something to ponder over.

A Sweet Running Motor Furnishes Power.—Renault silence has ever been a mystery, due to the complete silence of the machinery, rather than to the musical notes, as distinguished from discords, which are usually regarded as obtaining in what is called noiseless performance. The motor in Renault cars is small for the power, belonging to the class in which cylinders are cast in pairs, with the mechanically operated exhaust and inlet valves on the same side, L fashion.

The single camshaft is with the cams cut from the solid, and

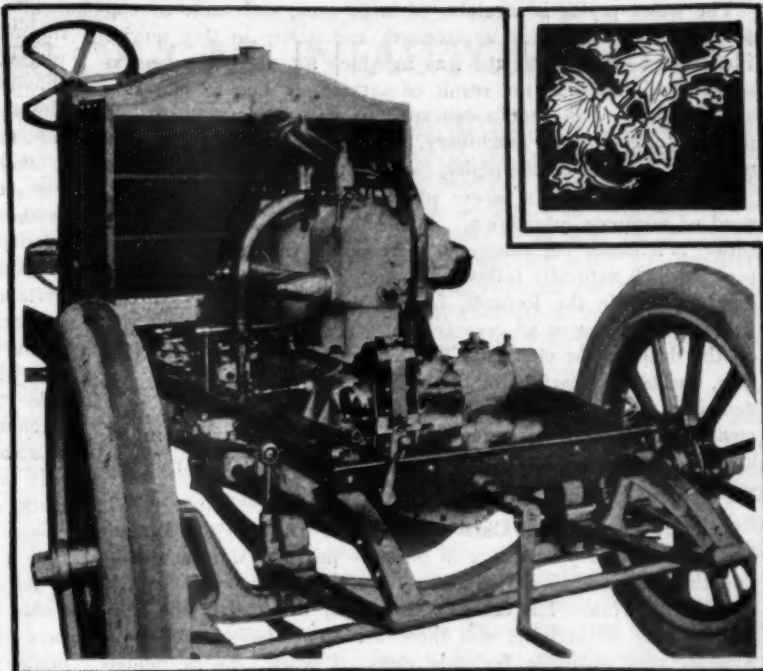


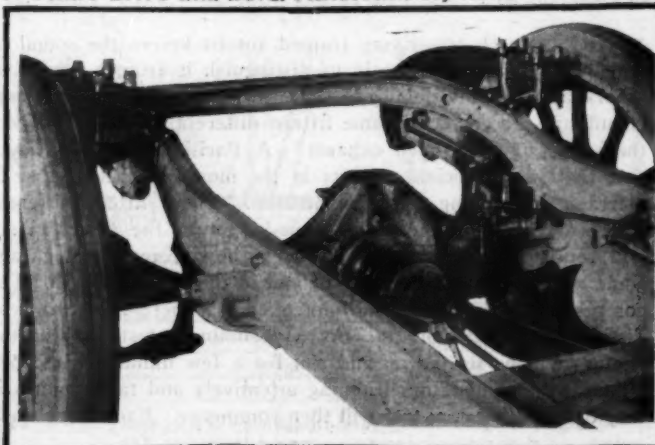
Figure III—Thirty—Special—Motor, Magneto, and Thermo-Syphon Cooling

the material is that which will take great hardness without brittleness, which is but a way for saying that the material used is highly kinetic. Likewise, the crankshaft is of a suitable grade of material, taking into account the arduousness of the service, and the desirability of continuity, due to the cost and inconvenience which must follow if crankshafts fail in service.

Ignition is by means of Simms-Bosch high-tension magneto, in which the secondary circuit connects up to Renault spark plugs, which are noted for long life and the entire absence of "sooting" tendencies. The magneto is shown in Fig. 3 and is driven by a helicoidal pinion, from the camshaft, with all parts enclosed.

Cooling is effected by means of the thermo-syphon system, in which the method reaches a high state of efficiency due to the nice manner in which the principle is carried out. The radiator is shown in Fig. 3, just over the flywheel of the motor, and as will be observed the air-propeller is of the type in which the "vaness" are on the periphery of the flywheel, just where they will do the most good. With a superabundance of air to wipe the heat off of the cooler surfaces, coupled with a static head of water, due to the elevated position of the radiator, the success which has attended the Renault system of cooling is easily understood, especially if account is taken of the commodious piping system used and the manner of its application.

Figure IV. Thirty Special—Shaft-Drive and Level Platform Suspension



The water piping is straight, of large area, and made of copper, which is noted for its strength and utility in this service. Flexibility is assured by the way in which the design is consummated, and leaks, as the result of service, or due to vibration, are avoided. The neat appearance of the piping adds to the pleasing effect of the machinery, and should repairs have to be made for any reason the piping can be dismantled readily.

The more efficient a power plant becomes the greater is the need of adequate lubrication. While definite and profuse lubrication is a factor for efficiency, yet even so, the very increase in power which naturally follows, demands the greatest certainty of lubrication. In the Renault, for the cylinders, oil is regulated and fed by means of an eccentric on a rod, within the lubricator on the dash of the chassis. The lubricator is of the sight feed type, and besides caring for the cylinders in the manner as above described, crankcase lubrication is assured and regulated by means of a special arrangement of transverse partition in the lower half of the crankcase. The connecting rods are oiled by splash, but provision is made to assure uniformity.

Renault Commercial Cars.—While it is true that the Renault cars are in great prominence in pleasure pursuits, it is not to be said that they are to the exclusion of the same make of cars in commercial work. The company is heavily engaged in the commercial zone of activity, and there are four distinct models of Renault cars available for this class of work. These models cover about everything required from a light delivery wagon to trucks for the heaviest service in important work.

The smallest car is designed to carry 1,200 pounds burden, and the motor is rated at 9-12 horsepower. This is the light delivery wagon, in which the motor is of the two-cylinder type, and the chassis is intentionally designed to place in the hands of men of almost no skill at all. The 10-14 horsepower car is the next size, and this car is rated to carry a load of 1,800 pounds. This is also a car in which the motor is of the two-cylinder type. For heavy work the 14-20 is available, in which the motor is of the four-cylinder type, and the normal capacity of the car is 3,400 pounds burden. This chassis is probably one of the finest propositions possible to devise for the purpose, in which all the parts are especially devised in view of the arduousness of the service, taking into account the lack of efficient care which must be the lot of trucks in the hands of men who are not mechanics and whose early training may be such that they never will be able to wield a monkey-wrench with safety to any piece of mechanism below the ruggedness which will put up with abuse to a vast extent and in divers uncalled for ways.

In addition to the chassis which will do for delivery and truck work, the company has in hand a 20-24-horsepower, four-cylinder "autobus" which is rated to sustain under a load of four tons. This is the chassis used by the New York *Herald* in its most exacting work and it is claimed that the *Herald* depends upon the car to a vast extent. Of course, the commercial cars of the Renault are much like the pleasure vehicles in the main; that is to say, there is the same fine material, the details of design, and the Renault ear-marks with the brand of success burned in them by the fire of skill and experience.

ENTRIES FOR MONACO BOAT RACES BREAK ALL RECORDS

PARIS, March 10.—A total of 97 boats, consisting of 66 cruisers and 21 racers are now entered for the Monaco carnival, March 31 to April 11. The number is a record and exceeds that of last year by 12. For the first time the limited bore regulations, as applied to racing automobiles, will be in vogue for the motor boats, the weight of the hull being limited according to the bore of the engine, and the maximum bore being fixed at 155 millimeters for a four-cylinder engine, as in last year's road races. Many of the boat engines indeed will be those which were used on racing cars last year.

The center of interest lies in the International Cup, which will be disputed by boats of unlimited power for a distance of about 60 miles. As under the Gordon Bennett rules, only three boats per nation can be entered, the nations regularly engaged being America, with Dixie and Standard; France, with Panhard, Levassor and Alla-Va, driven by Brasier engines, unless either of these unlimited boats is beaten in the eliminations by some of

the fast 155-millimeter bore craft; England, with Wolseley, Siddeley and a privately owned boat which has not yet been named; Germany, with the Prinz Heinrich, engined by Benz, and the Lizelotte, with Mercedes Grand Prix engine; Italy will have one boat only, the Nibbio, carrying a Fiat 155-millimeter engine.

Other interesting speed tests will be the championship of the sea, a 220 kilometers scratch event for all boats having qualified in their class races, and the mile and kilometer races. In addition to the two American racers, Dixie and Standard, the Western continent will have a third champion in a hydroplane boat built by W. H. Fauber and carrying a Motobloc engine of 155 millimeters bore. This craft, part hydroplane, part boat, will run in the 155-millimeter racing craft, the Championship of the Sea, the mile and kilometer trials, and in the International Cup as a French boat (engines only being considered) if she qualifies in the elimination.

PARIS TO HAVE A NOVEL CHAUFFEURS' COMPETITION

PARIS, March 10.—Every trained autoist knows the sound of his own car sufficiently to distinguish it from a crowd of others, although invisible to the eye. But how many professional chauffeurs can correctly name fifteen different cars merely from the sound of their open exhaust? A Parisian journal believes that there are sufficient experts in the music of the exhaust to warrant the holding of a competition. About fifteen different cars, varying from the modest one-lunger to the powerful six and four-cylinder monster, will be gathered in a large garage some Sunday morning toward the end of the present month. The competitors will be in an adjoining room, where they can hear distinctly, but see nothing. As a preliminary test each of the engines will be started up and run for a few minutes with open exhaust, the competitors listening attentively and taking notes if they desire. The real test will then commence. Each engine will

be run for two or three minutes with open exhausts, the competitors to write down on a slip of paper the name of the engine they believe to be at work. The competitor having the largest number of correct replies will be the winner.

The event will doubtless be keenly contested, but will of necessity be confined entirely to professional chauffeurs and repair men. The average automobilist, who may be an expert at distinguishing the make of a car from its noise on the road, has little opportunity of becoming familiar with the roar of its engine alone. Even the exhaust cut out would be more familiar, for the length of piping before the cut out is reached has a considerable influence on the sound, and this is more frequently heard than the directly open exhaust. A sound test of cars under ordinary road conditions would have been equally interesting and would have appealed to the average automobilist.

NATURAL ADVANTAGES OF GAS IN AUTOMOBILES

HOMOGENEITY is a property which is difficult of attainment in mixtures of gasoline and air out of a carburetor of the conventional float-feed type unless the gasoline is volatile in the extreme, and this is not likely to be true if the gasoline is a mechanical mixture of a number of the fractional distillates due to the range of temperature, in the distilling process, which is said to obtain at the present time. It is claimed that the present practice in the production of gasoline is to use all the fractions between 50 and 150 deg. C.

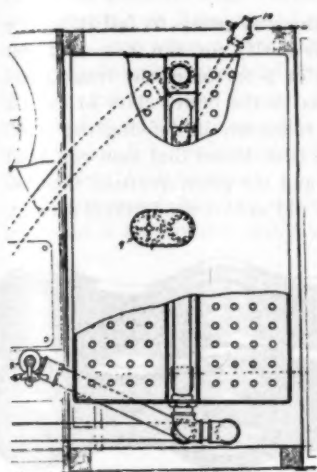


Fig. 1.—Generator with top cut away to show holes in pulp filling.

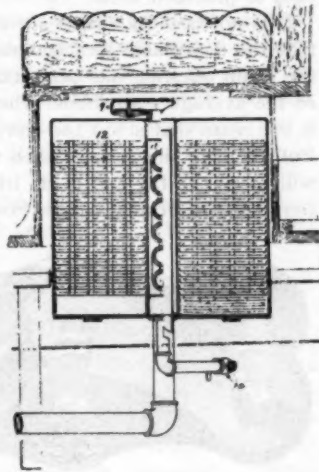


Fig. 2.—Section showing nest of boards with spaces between.

Hexane, the formula of which is C_6H_{14} , is admitted to be the superior fraction of all the distillates from the crude oil used in the production of gasoline, and while the distillers would like to have credit for using nothing but the best for the purpose, the fact remains that gasoline of the present time can scarcely be classed as hexane, nor does it seem to hold any more hexane than the amount required to assist in cranking a cold motor, it being the case that a motor could not be started "cold" in the absence of some of the more volatile of the hydrocarbons.

Carbon in Cylinders Due to Gasoline Used.—Lubricating oil is charged with the crime of depositing carbon on the surfaces of the combustion chamber, and this carbon in turn causes "bucking" and preignition. It probably is true that inferior cylinder lubricating oil will deposit carbon, to some extent, but the main trouble is from the gasoline which will not vaporize until it is allowed to contact with the hot cylinder walls, and this process of reducing the gasoline to vapor is bound to lead to a carbon deposit for the same reason that wood is "coked" if it is heated to a temperature of about 650 deg. C., provided the amount of air present is less than that which would cause complete combustion.

To a very considerable extent the trouble is aborted by preheating the mixture on its way to the combustion chamber or if the air is heated sufficiently before it enters the carburetor. The time was when this process worked very well, indeed, but it is becoming more difficult every day to so heat the air, or the mixture, that globules of gasoline will not enter the cylinders and clog up. The amount of heat required for the purpose is vastly more than is generally well understood, and unless enough heat is supplied, the results will be with a crop of carbon in the combustion chamber.

Any process that will manufacture a homogeneous gas to the entire exclusion of liquid gasoline will serve the purpose, and preheating the mixture is a step in the right direction. The time was when autoists hoped that illuminating gas could be put under compression and that enough of it could be carried in a tank of reasonable size to accomplish the work. It is generally understood that illuminating gas will serve well for the purpose, but it is not possible to store enough of the gas to enable a car to travel far without having to replenish the tank.

Recent Improvements Make Way for the Gas Tank.—That the gas-tank idea clings to the automobile with a tenacity which augurs for inherent utility will be seen in the illustrations here offered. Fig. 3 shows a gas tank and the manner in which it is connected up to a six-cylinder car in which it will be noticed that the carburetor is entirely dispensed with. The entire absence of a carburetor is the best indication of the change over from liquid gasoline to gas, and it is the manufacture of this gas, as it is needed for the motor, that will be given attention at this time.

The gas producer consists essentially of a copper tank, or container, about the size of the conventional gasoline tank, located in any convenient place, as under the seat of the driver, which tank is filled with laminae of wood-pulp sheets, superimposed. Each sheet is about 1-4 inch thick, of rectangular shape, and drilled full of holes, each about 1-4 inch in diameter, and spaced about 11-2 inches apart. The sheets of wood pulp are separated from each other about the thickness of one of the laminae, and the nests of sheets are in two sections.

Between the two sections of the nests of wood-pulp sheets the space is taken up by a heater for the air as it enters on its way to the gasoline-saturated wood-pulp sheets. The heater is made up of a coil of piping in a manner not unlike the radiators used in steam-heating work. The exhaust gases from the motor serves to convey the heat to the radiator. The air enters at the top, passes through the heater coil to the under side of the nests of wood-pulp boards. The admission of air through a check valve, and the suction of the motor, furnishes the required difference in air pressure, so that the air is sucked in.

Since the air cannot turn back through the check valve, it must pass up through the nest of pulp boards, and the holes in the boards furnish the openings, as well as a large surface. Fig.

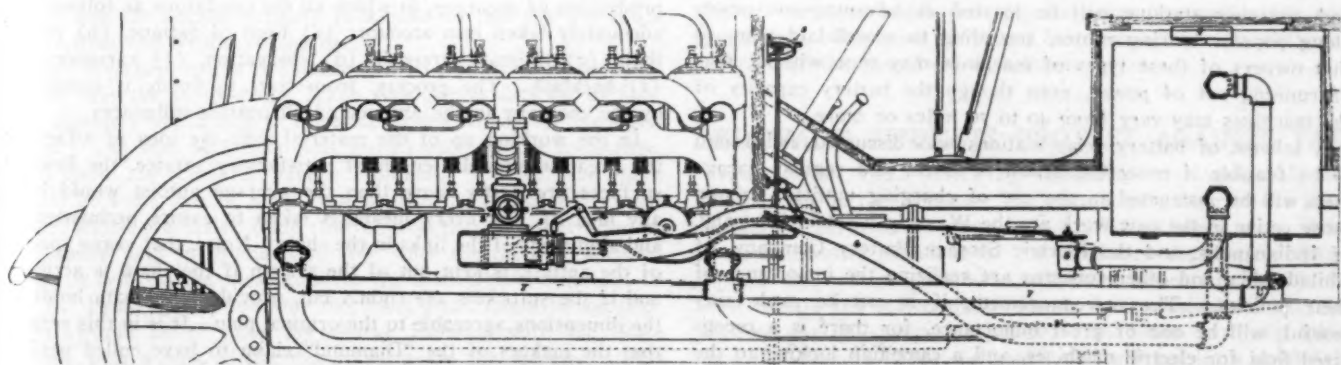


Fig. 3.—Diagrammatic scheme showing the manner in which the generator is used and piping connecting to motor.

t shows the top of the container cut away, exposing the top layer of pulp boards to view, and the small holes will be noticed. The same figure shows the heater in the middle of the container, and Fig. 2 is offered to more clearly bring out the construction features of the system.

The cross-section of the container, as shown in Fig. 2, indicates that there is but very little free space in the same, and in the process, gasoline is spilled into the top of the tank in sufficient quantity to saturate the wood-pulp mass. The amount of gasoline required is about 60 per cent. of the amount which the tank would hold if the wood-pulp system were not present. Excess gasoline is not required, and in the process the heated air as it passes up through the holes in the pulp boards wipes the vapor of gasoline off of the surfaces, and in view of the heated condition of the air, it is in fettle to become enriched, even if the gasoline is of a poor quality.

Through the good office of a valve devised for the purpose the rich mixture is diluted after it leaves the tank, and the device is so ingenious that the motor is enabled to draw just the quality of mixture of a homogeneous gas as will best serve the purpose, while the motorist is enabled to alter the proportions at will, taking into account the road conditions, atmospheric influences, and the properties of the gasoline, as the supply reduces in the tank, leaving the heavier residuum.

There can be no explosion of the gas in the tank for the reason that the same is not sufficiently diluted with air to render it explosive. If all the gasoline is used up, in so far as it can be, what is left can be ignited without danger of any sort for the reason that the same will not be highly explosive, and the amount that can hide in the free space is not sufficient to do any damage at all. As will be seen, then, there is no danger to be attributed to the presence of gasoline in a car, provided it is concealed in wood pulp in the manner in which these generators are built.

From the economy point of view it seems almost unnecessary to more than point out that what is wanted in any case is a homogeneous mixture, such as is made in this system, and since the system precludes the chance of dribbling liquid gasoline along the roadway, taking into account the homogeneity of the same, the radius of travel of a car is about the same as if the tank were filled with gasoline of the conventional sort without the packing of wood pulp. In the meantime the motor will deliver more power with the better mixture, and carbon formations in the cylinders are aborted. The International Generator Company, at 244-250 West Forty-ninth street, New York City, is very active in the manufacture of this system, and the demand is quite in keeping with the advantages following its use.

CHAIN OF ELECTRIC STATIONS PLANNED.

To further the development of the use of electric automobiles, a large gathering of those interested was held recently at the Boston Athletic Association, the manufacturers, the agents, the electric lighting companies and the battery makers being represented, and as a result steps are being taken to thoroughly canvass the whole electric vehicle situation. Numerous garages and charging stations will be located at advantageous points along popular touring routes, according to a well-laid plan, so that owners of these types of machines may tour without fear of running out of power, even though the battery capacity of the machines may vary from 40 to 70 miles or more.

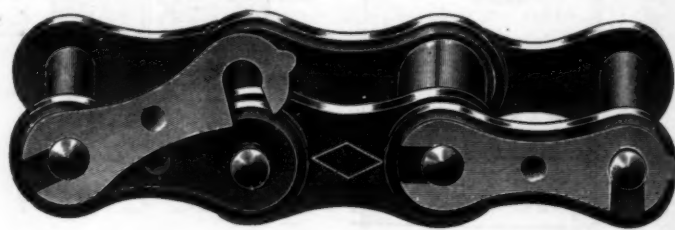
A scheme of battery relay stations was discussed and found to be feasible if concerted action is taken, and regular garage men will be instructed in the use of charging outfits. Among those active in the new work are the Waverly Electric Company, of Indianapolis, and the Electric Storage Battery Company, of Philadelphia, and other concerns are realizing the importance of their policies. The new movement, if it can be made successful, will be one of great importance, for there is a recognized field for electric machines, and a campaign looking to the more general adoption of them is a commendable one.

NEW DETACHABLE LINK CHAIN IS NOVEL.

Fame and Diamond chains entered into a lasting partnership and linked the automobile to success, despite the hamperings of road inequalities, lack of designing experience and the fearful strains that come. In the earlier days when it was extremely difficult to get materials so good that dependance could be put in them under the conditions demanded in detachable work, it was fitting to bow to the dictates of prudence.

Time wrought changes in materials and in methods of manufacture, as well as in the treatment of the finer grades of steel, with the result that Diamond chains have long been made of steel, the nature of which augurs for success under the most severe conditions of service, and the day of the "detachable" made bold to proclaim itself.

It is not because chains are in any way prone to fail in service that the detachable idea commends itself, nor can it be said that the chain question has been much of a factor in the trouble end of the average automobile, whereas, in the better class of cars, it is the chain that stood for sturdy reliability in defining the word. But, the time must come when the best device that man can build will reach the fag end of its life, and the great question then becomes one of prolonging the hoary old age of the faithful servant.



Diamond Detachable Chain Showing Locking Mechanism.

The Diamond Chain & Mfg. Co., of Indianapolis, Ind., recognizing the potency of the idea, recently brought out a chain for use in automobile work, into which is incorporated the detachable principle. The cut shows a link in the chain in which a thin strip steel lock on top of each outside link slips into a groove around the rivet surface and turning on one rivet as a center slips down into a similar groove on the other rivet, thus preventing the side bar proper from coming off. The strip is itself locked into position by being slightly warped inward, and having at its center an inward projection which snaps into a depression in the side bar. Once snapped into place, the strip can't change its position unless an intentional upward pressure is exerted on the clip at the end. The hole in the side bar is so reamed that when the bar is pressed into position, there is perfect bearing contact between the rivet shoulder and the side bar throughout the thickness of the bar.

High Grade Materials Lend Stability.—Billets of special analysis steel are used in the process, all under the eye and control of the makers of the chains. Nickel steel is used for such parts as demand the properties of metal of this sort, and case-hardened rivets in conjunction with seamless rollers help in the production of accuracy, in which all the conditions as follows are adequately taken into account: (a) limit of fatigue, (b) elastic limit, (c) ultimate strength, (d) elongation, (e) variation and (f) backlash. The process, from start to finish, is conducted by the company in the absence of all outside influences.

In the working up of the material with the idea of affording the greatest possible length of satisfactory service, the bearing surfaces are vastly more than the average autoist would have any idea of, and every means is taken to assure permanent fit and alignment of the links in the chain. Noise, that vague specter of the autoist, is kept out of the system if the chain is accurate and if the sprockets are rightly cut, provided the chain holds to the dimensions agreeable to the original plan. It is in this respect that the makers of the "Diamond" claim to have culled perfection and dressed it in its simplest form.

GOOD AND BAD LAWS PROPOSED IN WISCONSIN

MILWAUKEE, Wis., March 15.—At least eleven statutes relating to the use of automobiles have been introduced into the legislature of this State, but it has been so busy with other matters that it has not had time to consider them, and perhaps the only legislation that will be effected will be that for good roads. Of the bills proposed governing the automobiles there are several that are worthy of the support of the autoists of this State, while others will have to be fought. Two are identical and would change the present law to make the initial license fee \$2.00, and \$1.00 for each annual renewal. This meets with general approval, as does one to prevent anyone under 17 years of age from operating a machine, and one which cuts out speed limits, making it a penal offense to drive recklessly or when under the influence of liquor. Still another bill would prohibit the placing of bumps or other obstructions in highways, and a sixth makes it a misdemeanor for anyone to use an auto without the consent of its owner.

Of narrow-minded and thoroughly pernicious origin are four bills, and a determined stand will be made against them, if the

members of the State Automobile Association will work together. One provides for an annual registration fee of \$5.00 for machines not exceeding five horsepower, \$10.00 for cars not exceeding 10 horsepower, and fifty cents per horsepower for each additional horsepower above 10. If a car should be sold a re-registration would be required and all would expire on January 1. The dealers would have to pay \$40.00 annually, with \$5.00 for each extra set of number plates. Another of the bills is patterned along the same lines but bases its classification upon weight. Equally nonsensical with these is a proposal that hereafter the maintenance of guide boards by the several towns shall be optional instead of compulsory, and it can readily be seen how many towns would bestir themselves upon such a matter. The remaining obnoxious bill would allow each city to locally control the speed and use of automobiles within its own confines.

One bill has been introduced, upon which the Association has taken no stand, providing for a State inspection of all gasoline and prohibiting the sale of gasoline testing below 65 degrees. The oil people claim this will tend to raise the price of gasoline.

OHIO LAW IS AMENDED AT LAST.

COLUMBUS, O., March 15.—By the amendments to the State automobile law enacted at the recent session of the Ohio General Assembly, every license expires on December 31. Heretofore licenses expired one year from issuance, which caused the State automobile department considerable confusion. Each year the color of the tags to be placed in front and in the rear of every machine will be changed, making it possible for the police departments to ascertain whether the license for the current year has been paid. The words Ohio and the year will also appear on the tag. Motor trucks and drays which were formerly exempt from the operation of the law, are now included, making it possible for the State department to regulate such classes of vehicles.

Section 31, providing for records in each of the 88 counties, as well as in the State automobile department, of every conviction for violation of the law, was repealed entirely. The old law provided that every conviction of fast or careless driving should be recorded with the clerk of the courts in every county. Since no other misdemeanor or crime is so registered, it was thought to be a grave injustice and class legislation that would not stand the test of its constitutionality.

LEGAL FIGHT NOW ON IN CHICAGO.

CHICAGO, March 15.—Enough of the necessary money having been raised, the fight against the Chicago wheel tax has been begun and will be carried right up through the Supreme Court and a precedent established, not only for this city, but for the whole country. The kick is directed against the use of the tax money and the seating capacity as a basis for the tax ordinance rather than the weight of the car.

The objections to the ordinance and its results were so widespread that the Automobile Trade Association decided to fight it if outsiders would help to raise the money to pay for the legislation. The sum of \$10,000 was settled upon by the committee.

To quote the treasurer, Henry Paulman, "We feel that there should be some sort of a tax, but we use the boulevards extensively, which are under State control, and therefore get none of the money paid in to the city. We want the money expended where it will do the most good to the men who are obliged to pay it. Probably the best way to collect a tax from the automobilists would be to have the charge included with the State license, with a part of the money set aside for the city." This should be an easy thing to do, and with slight expense.

INDIANA MODIFIES ITS ROAD LAW.

INDIANAPOLIS, IND., March 15.—A radical change in the road laws of Indiana, that will probably mean a decrease in the building of new roads, has been effected in the repeal of the three-mile road law by the legislature. In a new law the procedure is changed, and the referendum system adopted. The new law provides that fifty resident property owners may petition to the county commissioners for an election to decide whether or not a road shall be built. If a petition is not presented protesting against the election and signed by 55 or more property owners, the commissioners are required to order the election.

Under the old law, upon the petition of fifty property owners, the commissioners were required to order the building and improving of a road, without the formality of an election. The only proviso was that the proposed road should not be more than three miles long and that it must connect at each end with improved roads or be traveled by a United States rural mail route. While the three-mile road law was in effect, roads to the extent of \$8,000,000 a year were built and improved under it. Farmers raised the principal objection to the old law, because residents of small towns petitioned for brick streets under the law and the whole township had to bear the expense.

MARYLANDERS WILL OPPOSE THE SWANN BILL.

BALTIMORE, March 15.—Secretary Frank W. Barling, of the Automobile Club of Maryland, has organized the autoists of Union Bridge, this State, for the purpose of co-operating with the club in its fight against the passage of the Swann automobile law, now before the Maryland Legislature, particularly that section of the same which provides for what is considered a new special rate. Raymond K. Angel has been selected as chairman *pro tem* of the new local association.

DELAWARE AUTOISTS PROTEST AGAINST TAX.

WILMINGTON, DEL., March 15.—Official protest against the bill now pending in the Delaware Legislature, proposing to tax automobiles as personal property, was made last week when John J. Satterthwaite, president of the Delaware Automobile Association, and other prominent members appeared before the State Senate and stated their reasons for opposing the bill, and pointing out its apparent injustice. No action has been taken upon the measure. That the association will put up a good fight against the measure is assured.

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THE FUEL QUESTION IS SERIOUS.

The reason why gasoline was used to the practical exclusion of kerosene oil in automobile motors was because the lighter fractions of the distilling process possessed the more volatile properties, and could be more completely burned in the cylinders, thus rendering up more power per pound of fuel used, and in the process carbon was not left as a residuum.

When gasoline was to be had for the purpose, it was predicted that the price would soar, for it was well understood that less than ten per cent. of crude oil would distill off in this form. It was then that inventors were active, and a means for burning kerosene oil was sought as if much depended upon success.

In due course the distiller of crude oil made bold to try a hand at inventing, and the gasoline furnished to automobile users is really a compound of all the fractions down to the kerosene distillate, with just enough of the lighter fraction to assure that a motor can be started cold. The result is that the fuel enters the cylinders as liquid—to a vast extent, at any rate—and in the combustion process the fuel is broken down and the carbon is "coked" out.

The whole thing was accomplished by such easy stages that autoists failed to account for the presence of excess carbon in the cylinders, unless to lay it to the lubricating oil, and the question of ignition gradually improved so much that the firing of the charge was not

attended by serious difficulty. In the meantime advanced experimenters located the real trouble, resulting in fuel systems in which the exhaust heat is utilized to vaporize the fuel so that it cannot enter the cylinders in liquid form, there to "coke" up.

While it is true that the fuel is not what it was supposed to be, it is equally true that the change resounds to the greater advantage of autoists in general, if it can be said that the heavier fuel can be made to burn without leaving a residuum, provided the power of the motor will be quite as good, and if flexibility will be no less. Starting "cold" is something to take into account, but this is a matter which seems to be in good fettle.



TRACTORS PLEASE RURAL POPULATION.

Anybody who is not familiar with or who does follow the progress of agricultural machinery will be very much surprised with the recent advances in this field, particularly among the tractors. These clumsy-looking machines bid fair to put the farm horse out of business, not because of its speed, but because of its inherent inability for sustained labor. Thus upon plowing the length of one side of a 200-acre farm, the horse must rest before attempting the return trip. This rest, when multiplied by the number of furrows ploughed in a day, means a large loss of time, possibly at a season when every minute is valuable. On the immense farms of the West and Northwest, some of which are of ten thousand acres and more, it is readily seen that this loss, whatever it may be, is again multiplied, this time by fifty or more. From the above, it is apparent that a self-propelled tractor, which can drag a gang plow and thus turn up six or more furrows at a time, do a series of these in less minutes than the horse takes for one and keep it up all day without a minute's rest, has advantages that the farmer must see and appreciate.

The timely trials of last year which took place at the Winnipeg Fair showed, as had never been shown before, what the tractor could do when given a fair chance and intelligently handled. A brief mention of some of the best performances will be appropriate. Thus, the winning machine ploughed 3 1-4 acres of virgin prairie sod, which a heavy rain had converted into sticky Manitoba "gumbo," in two hours on a consumption of 8 1-8 gallons of gasoline. This is an average of but 2 1-2 gallons per acre, which at 14 cents per gallon makes the cost for fuel just 35 cents per acre. This machine was of 30 horsepower, having four 6 1-4-inch by 7-inch cylinders, was operated by one man and pulled six 14-inch bottom gang plows.

Similar and equally valuable results were obtained in the French trials, which were not as extensive, however. These results show the farmer, who works on a small margin of profit at best, what may be done with the "new fangled" machinery, and thus points out an additional source of economy.

The winning machine and many of the others were so equipped that after the first furrow has been plowed, the machine steers itself automatically. This allows the man in charge to walk beside the plows and observe the work as it is done. The necessity for more than one man does not exist, therefore, an additional source of economy is opened up, this being a more real blessing to the farmer than the actual saving in cost, as farm laborers are particularly hard to get and keep.

SPEARE SUCCEEDS HOTCHKISS AS HEAD OF A. A. A.

BOSTON, March 15.—Lewis R. Speare, of this city, has been elected to the presidency of the American Automobile Association, to succeed William H. Hotchkiss, who has resigned, to give his full attention to his new duties as Insurance Commissioner of New York. During the automobile show the regular quarterly meeting of the board of directors of the A. A. A. was held, and Mr. Speare, the president of the Bay State Automobile Association, chosen to head the national body, filling out Mr. Hotchkiss' term, which expires on December 1.

At this meeting also a strong addition was made to the A. A. A. through the election to membership of two more State associations, the Colorado State Automobile Association, with six clubs, 650 members, and the South Dakota Motor and Vehicle

Chairman Powell Evans, of the Touring Information Board, has secured the official recognition of the United States Government as the national organization of motorists. This has been brought about by the A. A. A.'s having become a conferee of the National Conservation Commission, Mr. Evans being the Association's conservation committee chairman, and not alone through its interest in good roads can the A. A. A. work prove beneficial in this connection, but also in other ways. This is suggested in a letter to the commission from Chairman Evans, in which he suggests that through the influence of the A. A. A. every autoist in the country can, within a few weeks, be mobilized into a most efficient scouting force, to give notification promptly of any outburst of forest fires, as well as possibly



Quarterly Meeting of the A. A. A. Board of Directors, Assembled in Boston, March 15, President Speare Presiding.

Association, with six county organizations, 350 members, bringing the total number of State bodies to 27. The Lookout Mountain Automobile Club, of Chattanooga, Tenn., was elected as an unfederated club. George C. Diehl, of Buffalo, a member of the board of governors of the Automobile Club of Buffalo, county engineer of Erie County, and an active participant in all good-road movements, was appointed chairman of the national good roads board, to succeed C. Gordon Neff, of Cincinnati, whose resignation was accepted with regret. P. M. Milner, president of the Motor League of Louisiana, was elected a director.

The deed of gift of the Cobe trophy, donated by Ira M. Cobe, president of the Chicago Automobile Club, for a stock chassis race, was accepted and referred to the Contest Board, with power to conduct the event. Those present at the meeting were: Lewis R. Speare, president of the Bay State A. A.; A. E. Bliss, president, and A. D. Converse, vice-president of the Massachusetts State A. A.; J. P. Coughlin, president of the Worcester A. C.; A. E. Lerche, president of the A. C. of Springfield; W. W. Brown, president of the A. C. of Vermont; S. A. Miles, general manager of the N. A. A. M.; E. P. Chalfant, general manager of the A. L. A. M.; F. B. Hower, chairman of the A. A. A. Contest Board; C. H. Gillette, secretary of the Connecticut A. A.; F. H. Elliott, secretary of the A. A. A.; W. B. Lasher, A. C. of Bridgeport, Conn.; L. J. Powers, Jr., Springfield; W. H. Chase, Wachusett A. C.; Francis Hurtubis, Boston; E. F. Whitmore, Williamantic, Conn.; H. R. Burbeck, North Adams, Mass.

giving aid in their suppression. Mr. Evans therefore urges each club to pass a resolution pledging its members to notify by telegraph the proper officer of any State of any fire observed.

AMERICAN MOTOR LEAGUE GIVES UP GHOST.

Apparently the American Motor League has passed away, though its demise has been a lingering one, owing to the individual activities of Isaac B. Potter, its president, who was the head of the L. A. W. in its palmy days when it had a membership of 107,000. The former offices of the League in the Vanderbilt Building on Nassau street, New York City, are untenanted, and, according to the *New York Globe*, Mr. Potter has become a resident of Denver, where he intends to continue practicing law. At one time an amalgamation seemed assured of the A. A. A. and the A. M. L., but the joint committee of the two bodies failed to agree upon a satisfactory constitution.

JERSEY AUTOISTS IN EVIDENCE AT TRENTON.

TRENTON, N. J., March 17.—Although a large number of automobile owners to-day appeared in the Assembly to urge the passage of the Colgate bill, they were disappointed, for the bill went over until to-morrow, having already passed its second reading in the House. At the same time they protested vigorously against the plan of the legislature to divert \$120,000 from the motor vehicle department into the State treasury.

CHICAGO MAKES PREPARATIONS FOR COBE TROPHY RACE

CHICAGO, March 15.—By the appointment of a board of executives and other officials, and the inspection of the proposed course, active preparation for the road carnival of the Chicago Automobile Club on May 29 and 31, which will include a light car race upon the first day, and the national contest of stock chassis for the Cobe trophy on the second, has been commenced. A thorough inspection of the roads was made in a trip yesterday and the possibilities of the circuit have been examined by experts. The excellence of existing conditions surprised those who will have the events in charge, so that a race that will compare with the most successful national events is predicted.

The club has decided to give the conduct of the meet to its contest board, Joseph F. Gunther, A. J. Banta and C. G. Sinasbaugh, while the various executives will consist of eleven men, in whose hands will be vested the power to carry on the work. Frank H. Trego has been made general executive, having a general supervision of the details; N. H. Van Sicklen, Sr., will superintend the construction of the course; F. E. Edwards will attend to the construction of the grand stands and the fencing while other departmental chiefs include the following: Technical, David Becroft; finance, Ira M. Cobe; house, Burley B. Ayers; hospital, Dr. L. W. Bremerman; diplomacy, Harold H. Wheeler; publication, Fred W. Van Sicklen; publicity, C. G. Sinasbaugh. The committee on public safety will have for its chairman the colonel commanding the Indiana militia, which, it is hoped, will be detailed to guard the course. A Chicago delegation will visit Governor Marshall at

Indianapolis this week to ask that soldiers be assigned to this work. It is hoped the Governor will consent.

In the trip over the course yesterday it was found that the stretch between Crown Point and Cedar Lake is the most winding, but it is believed that while the curves may slow the drivers some, they will not be dangerous. From Cedar Lake to Lowell, a distance of six miles, there is a perfectly straight road, then comes the turn into Lowell and out on to a broad road, that runs three miles to the southeast corner of the course. This bit of road has a couple of turns, one a short S, but in general is one of the best parts of the course because of the width and smoothness of the roads. Turning from this leg there is a 10-mile straight way to Crown Point, where great speed can be made. On this leg, near Crown Point, it is planned to erect the grand stand, probably within a mile of Crown Point, because of its accessibility.

"I consider the Crown Point-Lowell course superior to the one over which the Braircliff was run, and I believe it is the equal of the Vanderbilt, outside of the Motor Parkway strip," said N. H. Van Sicklen after the inspection trip. "It is going to take a lot of work to put the course in shape, but I believe that a liberal expenditure of money will give us a circuit that will be capable of producing a winning average of 50 miles an hour, which is not bad when it is remembered the race is for stock cars. The roads are generally wide enough for the cars to pass each other. The circuit is about 24½ miles in length, instead of the 22 that had been estimated, so Chicago will have a circuit as good as any in the country."

FLORIDA'S MEET MAY RESULT IN NEW RECORDS

DAYTONA, Fla., March 17.—The annual races on the Ormond-Daytona beach, scheduled to begin next week, Tuesday, and continue the balance of the week, may result in some new straightaway speed records, for the entry list promises to contain some of the most noted cars in the country. Owing to the lateness in the announcement of the meet itself, the entry list is going to be kept open until the eleventh hour. The Florida East Coast Automobile Association is busily engaged in making final preparations, and the resourcefulness of W. J. Morgan, the manager of the meet, is certain to bring forth a generous entry.

One of the noted cars entered is the Benz, which Hemery drove in the Savannah Grand Prize. This has been bought by Hugh McIntosh, the well-known Australian sporting man, who is here to see how it will perform in the hands of D. L. B. Brown, who made the best amateur record a year ago. Ralph De Palma is a Fiat participant, and H. J. Kilpatrick will drive the Hotchkiss, which was the best performer in the Jamaica (L. I.) straightaway trials. Herbert Lytle will also participate, probably with an American, and George Robertson, the Vanderbilt winner is a possibility.

PERMISSION FOR FAIRMOUNT PARK RACE GRANTED

PHILADELPHIA, March 15.—Thoroughly pleased with the result of the Founders' Week 200-mile stock car race, which was held upon its fine roads last fall, the Fairmount Park Commission on Friday granted to the Quaker City Motor Club the right to repeat its successes upon the same course on October 7 of this year. Thus this club is the first in the country to set its date for what will undoubtedly be one of the most important events of its kind held in this country this year. A single dissenting vote was cast by the commission, recognized to be one of the most conservative in the city.

Formal application was made through a letter to the board at its regular monthly meeting, in part saying: "It is the intention to use, if possible, about the same course which was followed in the Founders' Week race, and to conform to the same rules and regulations, although we wish it understood that such conditions as you may see proper to impose will be strictly complied with." The same responsibility for the roads and the same method of policing the course will be enforced.

So well did the members of the commission favor it that the letter was hardly discussed, and the club will now have to deal only with the Committee of the Park on Superintendence and Police, working with it in planning for the big contest, as arranged by the Park Commission. The result of this is not only exceedingly gratifying to the Quaker City Motor Club, but also to all Philadelphians, and it is freely predicted that the crowd of 400,000 people which saw last year's event—a record attendance—will be materially increased.

Although the big road race will be the star card in the Quaker City Motor Club's programme of enlivening affairs, it will not be the only one by any means and the contest committee is outlining a busy season. A roadability run will be held late in April, as a preparatory stunt to a big four-day endurance contest to Pittsburg and return, scheduled for May 19 to 22. It is probable that this date will be slightly changed because the Norristown Automobile Club has already set its run to Hagerstown and back for May 18 and 19.

What the Clubs are Doing These Days

HARTFORD AUTOISTS DECIDE TO EXPAND.

HARTFORD, CONN., March 15.—General expansion and broadening the influence of the Automobile Club of Hartford, in the interests of automobilists, is the matter of greatest import to its members since a well-attended meeting was held at the club rooms in the Allyn House on last Friday evening.

The acquirement of a permanent clubhouse has always been a topic of discussion, and there seems to be a more strenuous demand for one now than ever before. The membership is now about 350 with bright prospects for an increase before spring. A committee, consisting of General Wallace T. Fenn, chairman, Edgar L. Ropkins, F. W. Stickle, N. F. Allen, C. H. Veeder, C. D. Rice, H. P. Maxim, Geo. W. Merrow, A. G. Hinckley, F. A. Morley and F. W. Dart, was appointed to draw up suggestions for the expansion of the club. They will report at a banquet to be held on Friday evening, March 26.

The club by unanimous vote has gone on record as being heartily in accord with the proposition to erect a bridge at the mouth of the Connecticut River connecting Lyme and Saybrook. It would obviate the use of the obsolete ferry which plies at the mouth of the river. The Automobile Club of Hartford will be more of a factor in the sport this season than ever before. The forthcoming endurance run, from all reports, will be the best ever held around here. Every member is anxious to have the organization listed among the best of the country. When the roads are in good shape the sign post committee will continue its campaign where the coming of cold weather necessitated a stop. Every road of any importance will be amply posted for the benefit of all who motor. Since the club inaugurated an anti-scorching campaign some time ago there seems to have been a decided let-up on the part of the reckless element.

CONGRESS STEALS MARCH ON AUTOISTS.

WASHINGTON, D. C., March 15.—The Automobile Club of Washington has decided to put up a vigorous fight against the imposition of an annual wheel tax on automobiles. During the closing hours of Congress, a rider was tacked on to the District appropriation bill, providing that hereafter there shall be assessed and collected an annual wheel tax on all automobiles owned and operated in the District of Columbia. Cars having seats for two persons will pay \$3, and those having seats for more than two persons will pay an additional tax of \$2 a seat.

This provision was included in the bill without the knowledge of the automobilists, and had been a law a week or more before it was known to any one except a few members of Congress. Naturally a big howl went up from the automobilists and the matter was discussed at length at the club meeting on Saturday evening, it being resolved to fight the provision to the last ditch, on the ground that it is class legislation of the rankest sort. A resolution was passed authorizing the club's secretary to notify every member of the organization not to pay the tax until compelled to do so by the Federal courts. It has not as yet been decided whether the Club will institute a test case.

A SMALLEST CITY WITH AN AUTO CLUB.

EVANSVILLE, WIS., March 15.—This little city will soon have an automobile club, which will affiliate with the Wisconsin State A. A., a member of the "Three-A." Twenty-two prominent residents of the little city have purchased cars, and at the suggestion of the Milwaukee Automobile Club, are agitating the formation of a local club. If this is done, Evansville will have the honor of being the smallest city in Wisconsin to have a club.

EARLY POPULARITY OF NORRISTOWN RUN.

NORRISTOWN, PA., March 15.—The contest committee in charge of the endurance run of the Norristown Automobile Club, which will be held over a 400-mile route between this place and Hagerstown, Md., May 18 and 19 next, have thus early received so many requests for entry blanks as to warrant the claim that the run will be one of the largest, as regards the number of contesting cars, ever held in this part of the country. Not less than 75 cars is the committee's claim. The route as finally selected provides for controls at Coatesville, Lancaster, York, Frederick, Md., and Hagerstown, Md., the overnight stop—190 miles—and at Gettysburg, Harrisburg, Lebanon, Reading, Pottstown, and finish at Hotel Montgomery, this city—210 miles.

Two classes of entries are provided for—the trade and the laity. All manufacturers and agents are eligible to the former class, which is sub-divided into touring car and runabout divisions; the latter class is open to any club member or non-trade member of the A. A. A. The details of the run will be looked after by the following officials: Referee, John H. Rex; business manager, Oliver F. Lenhart; starter, Wayne Davis; assistant starter, A. D. Hallman; chief checker, Earl Wentz; associate member A. A. A., Harry Lasher. At the conclusion of the run the cars will be impounded and critically examined by the following technical committee: Linn De Haas, Henry Lewis and Lawson Ballard. A "pathfinding" expedition will go over the route on March 31, April 1 and 2 to arrange for checking stations, hotels, accommodations and other matters.

SYRACUSE CLUB HOLDS SEVENTH BANQUET.

SYRACUSE, N. Y., March 15.—Few automobile clubs in this country can boast of sufficient age to hold a seventh annual banquet, but the Syracuse Automobile Club is able to do so, and on last Wednesday evening had its seventh celebration, there being about 200 guests present, and the affair was a success from start to finish, all checking in at the windup without a penalization. C. Arthur Benjamin was toastmaster, and in his remarks predicted that the present membership of 230 would be increased to 450 before another year has passed.

President Hurlburt W. Smith made an interesting address, telling of the history of the organization since its inception in 1901, when the first run was held over the State fair boulevard, and one man reached the toll gate.

Mayor Alan C. Fobes, Professor W. K. Wickes, Rev. D. B. Thompson and others also spoke. The committee in charge was composed of H. W. Smith, W. L. Brown, D. E. Brown, C. E. West and Forman Wilkinson.

MARYLAND AUTOISTS AFTER JOY RIDERS.

BALTIMORE, March 15.—The Automobile Club of Maryland, at its regular semi-monthly meeting, decided to furnish the police department with slips, containing the names of chauffeurs and the number of cars, so that the policemen can report any of those seen in questionable localities. By this means the club expects to be successful in ending the persistent joy riding by chauffeurs.

GRAND RAPIDS CLUB PLANS HILL CLIMB.

GRAND RAPIDS, MICH., March 15.—The Grand Rapids Automobile Club has decided to promote a hill climb, with an A. A. A. sanction, to be held some time in the near future. The events will be divided into several classes, under the direction of W. D. Vandecar, chairman of the tours and contest committee.

ROCHESTER HAS ITS SECOND ANNUAL SHOW.

ROCHESTER, N. Y., March 15.—Rochester's second annual automobile show was opened by Mayor Edgerton this afternoon in Convention Hall, under the auspices of the Rochester Automobile Dealers' Association, with eighty cars upon the floor. Every automobile dealer in the city is represented, and around the galleries and balconies are located the accessory and supply exhibits. The whole structure has been brilliantly decorated and illuminated for the occasion. The exhibition has proven to be of great interest to automobilists, not only in this city, but also in a great many surrounding towns. To the dealers and visitors, alike, not only in point of decorations but also in the merits of the machines shown, the event gives promise of being highly satisfactory. The building has been so arranged as to give the tradesmen as much space as possible, and it is expected that still more machines will be added to those now in place as the week goes on.

A number of the cars were shipped directly to this city from Boston, while others have been going the rounds of the shows in the Middle West. Two Rochester factories are represented, the Selden and the Cunningham, the latter a newcomer. Here-with are the car exhibitors:

Hollis-Rand Company—Overland.
D. M. Dorman—Winton.
Gabel & Hill—Babcock electric.
C. E. Hartson—Mora.
C. L. Whiting—Buick.
Arthur McNall—Peerless, Pope-Hartford, Rauch & Lang electrics.
L. B. Kirkpatrick—Oakland.
Genesee Motor Vehicle Company—Maxwell.
Benson & Hughes Motor Vehicle Company—White, Rambler.
Rochester Automobile Company—Packard, Baker, Lansden.
A. M. Zimbrick—Stoddard-Dayton, Kissel-Kar.
Thomas J. Northway—Ford, Reo, Marion.
Union Motor Company—Mitchell, Chase motor wagon.
Selden Sales Agency—Selden.
Mabbett-Bettys Motor Car Company—Cadillac, Stevens-Duryea.
Caledonia Avenue Auto Company—Detroit electrics.
Smith Sash & Door Company—Welch.
James C. Dryer—Cunningham.

The show will continue throughout the week, during the afternoons and evenings a number of social features being scheduled to accompany it, and concerts given by the Fifty-fourth Regiment orchestra and band will tend to heighten the festivities.

MILWAUKEE SHOW REVEALS LARGE SALES.

MILWAUKEE, Wis., March 15.—After the closing of the big show at the Hippodrome, last Saturday night, the dealers and exhibitors, to a man declared it the best ever. The number of cars sold has surprised even the most sanguine of exhibitors, whereas the croakers have vanished into thin air.

The automobile club is rejoicing, too, because the large and well sustained attendance, totaling over 25,000, will result in swelling the club treasury by several hundred dollars. Had it not been for the unfavorable weather on the closing night, a record for attendance would have been made then with a corresponding effect on the receipts.

Saturday, however, was the big sale day and despite the bad weather the demonstrators were kept busy from morning to night, and a big bunch of orders were booked.

The first result of the enthusiasm has manifested itself in the decision to repeat next year. If this is held, it will be next fall at the time when the new models come out.

ALL SYRACUSE DEALERS WILL EXHIBIT.

SYRACUSE, N. Y., March 15.—If all the automobile dealers of this city could be given the amount of space for which they have applied, there would have to be an overflow meeting in connection with the show which will be held here from March 24 to 27. All of the members of the local trade have asked for space, as well as numerous supply men and accessory dealers, and all will be given just as much room as possible. Dai H. Lewis, who will have entire management of the event, is expected to arrive shortly and take charge. Mayor Alan C. Fobes will open the exhibition.

LATER APRIL DATES FOR NEW YORK CARNIVAL.

For a number of important reasons, conflict with Easter and Holy Week, the desire for more settled weather conditions, and the need of more time for preparation, has influenced the carnival committee of the New York Automobile Trade Association to postpone the week of festivities from April 5 to 10, as at first planned, to the week of April 26, closing upon May 1. The local trade seems much pleased with this move and more hearty support than ever has been promised.

At a recent meeting of the committee a number of important matters were considered. One of them is the determination to give as prizes for decorated cars \$2,000 in cash, and to allow in line only those makes of machines whose metropolitan representatives have contributed to the carnival fund, although at the same time it has been deemed advisable to prohibit any car from carrying any name or mark, except its number. R. G. Howell will have charge of the parade this year, as he had last.

Headquarters for the carnival committee has been located at the main store of the American Building, at Columbus Circle, through the courtesy of W. R. Hearst, with Secretary Walter C. Lee in charge. In electing the king and queen of the carnival, to preside over and lead the pageant on the Saturday afternoon, it is probable that a popular vote will be taken.

The dates as they now stand are as follows: Monday, April 26, hill climb; Tuesday, April 27, straightaway races and speed trials; Wednesday, April 28, souvenir day on automobile row and banquet; Thursday, April 29, gymkana games, obstacle races, etc.; Friday, April 30, endurance run; Saturday, May 1, afternoon carnival parade.

Alex. Schwalbach, chairman of the endurance run committee, has named the following as the members of the committee: Herman Kuntz and C. F. Clarkson, A. L. A. M.; Alfred Reeves and L. M. Bradley, A. M. C. M. A.; E. L. Ferguson and H. C. Harbach, secretary, Quaker City Motor Club.

MINNEAPOLIS HAS NORTHWEST SHOW.

MINNEAPOLIS, MIN., March 15.—What is the greatest exhibit of automobiles ever held in the Northwest opened Saturday night in the Minnesota State Armory, and will continue throughout this week. The Minneapolis Automobile Show Association, an organization of local dealers, after having dropped out of the show business for a year came to the front this year with an exhibition which is the biggest kind of a success. Over 40,000 square feet of space was sold, and a score or more of tardy applications were turned down, because of the lack of space. Manager Walter Wilmot, the ex-big league baseball star, prepared things with a lavish hand, and the decorating and lighting schemes are elaborate and harmonious.

The entertainment features of the show this year surpass anything before attempted in Minneapolis. The First Field Artillery band, a celebrated national guard organization, gives concerts twice daily, and besides this a dozen artists, both vocal and instrumental, have been engaged. In addition to these attractions, there is continuous vaudeville in the portion of the ball-room, on the third floor, not been turned over to exhibitors.

BROOKLYN TO HAVE ITS FIRST SHOW.

BROOKLYN, N. Y., March 15.—This section of Greater New York will have its first individual automobile show, under the sanction of the Long Island Automobile Club, at the Clermont Rink from April 10 to 17, and the prospectus sent out by the managers, C. H. Green and E. J. Rowe, says that "it will be the most beautiful show ever held in America." The floor space has been divided so that there are thirty-one large spaces for exhibits of automobiles, and twenty-five for accessory booths. The large spaces average about 15 by 18 feet in size, and enough have been secured in options to show the interest taken in the event by Long Island tradesmen.



Packard 3-Ton Truck Used for Hauling Ice.

This truck has recently been placed in service by the Union Merchants' Ice Company, of San Francisco. This marks another branch of service to which the commercial car is being applied.

NEW BOSTON SALESROOM FOR PACKARD.

BOSTON, March 15.—Expansion of the local automobile trade beyond the bounds in which it has heretofore confined itself is indicated by the announcement just made by Alvan T. Fuller, agent for the Packard and the Cadillac, that he has purchased 87,500 square feet of land on Commonwealth avenue, near Cottage Farms, upon which he is to erect a building 300 by 70 feet, ground measurements, and five stories high, to contain his salesrooms, offices, shops and repository. Mr. Fuller for several years has been located in the Motor Mart in Park square, where he occupied a very large amount of space with his salesrooms and shops. His business has outgrown even these commodious quarters, and for this reason he is to erect the new structure.

The lot of land has a frontage of 271 feet on Commonwealth avenue, the principal automobile thoroughfare to the west of the city. It also has a frontage of 356 feet on Malvern street, 260 feet on Gardner street and is 304 feet long on the rear line. The frontage on the avenue is on a curve, which will give Mr. Fuller's establishment a conspicuous position. The building probably will be of reinforced concrete, and it will be equipped for making every part of an automobile.

ANOTHER ADDED TO YORK'S FACTORY.

YORK, PA., March 15.—The three plants at York now devoted to automobile manufacture will soon be augmented by the works of the New Departure Motor Company. This is a Western concern, with headquarters in Lansing, Mich. The head of the firm, J. C. Montgomery, has been in the city for several days negotiating for a site, and has practically decided upon the one he wants.

Upon this will be built a large modern plant, to accommodate 500 men. The output will be a lower-priced car, of which 1,500 will be turned out for the 1910 season. The principal product will be taxicabs, of which two-thirds of the output will consist, the other 500 being commercial cars. The principal office will remain in Lansing, the new works here being but a manufacturing branch.

MAXWELL PLANS 10,000-MILE NON-STOP.

In order to boost the non-stop run records as high as possible, the Maxwell-Briscoe Motor Company has determined to start a 10,000-mile non-stop test, using one of the four-cylinder 30-horsepower runabouts, and within a few days this will be started. It is probable that the first trips of the car will be in and out of Boston, covering the roads for many miles around that city, and, it is reported, an A. A. A. sanction will be asked, naming this as an endurance contest. Carl W. Kelsey will have charge of the performance.

WITHERBEE IGNITER MOVES TO SPRINGFIELD

SPRINGFIELD, MASS., March 15.—No sooner did the regulars in the vicinity of the New York Motor Mart discover that the Witherbee Igniter Company had something up its sleeve than there came from Springfield news to the effect that the company had taken possession of a large, modern brick factory building on Birne avenue, at the corner of Arch street, this city. With upward of 40,000 square feet of floor surface, in one of the most important automobile centers in New England, it is learned that the company proposes to cut loose with its highly specialized devices with a view to reaching a far higher level of production, hoping, perhaps, to ultimately keep pace with the demand.

The new plant is equipped with up-to-date machinery, and such apparatus as will facilitate in the processes by which the well-known Witherbee accessories are made. Among the new endeavors, under the most happy auspices, will be the pushing of Wico commutators, spark plugs, ignition wire, batteries and Volta magnetos. The general office of the company is now at the plant, in Springfield, but the Motor Mart quarters will remain the New York City branch office of the company.

'09 RAINIER CARS SOON DUE IN NEW YORK.

From the old factory of the Rainier Motor Company, which has resumed operations at Saginaw, Mich., the first of the 1909 models of the Rainier cars will be sent to New York, and will be shown in the new headquarters of the company at Broadway and Sixty-fourth street next week. Having acquired the rights, title, and interests of the Rainier Motor Car Company, the new corporation, with a capital stock of \$350,000, has been duly registered at Albany, N. Y., and the production of Rainier cars will now proceed without interruption. The incorporators are Paul N. Lineberger, George C. Comstock, and Frederick H. Van Houten, and the management will be in the hands of John T. Rainier and Mr. Lineberger, the president and vice-president, respectively. In addition to taking the corner store for its metropolitan headquarters, the firm will have the entire top floor of the same building, with over 22,000 square feet of floor space, giving room for repair and paint shops.

At the Saginaw factory it is the Marquette Motor Company which is producing the cars for the Rainier Company. The Marquette company is capitalized at \$300,000, and it is understood that it has the backing of the General Motors Company, in which Buick and Oldsmobile interests are merged.

ACME REVIVES OLD COACHING DAYS.

Over the same roads that many years ago were the routes taken by the mail and passenger coaches on regular schedules, in lumbering from New York to Philadelphia, an Acme limousine has now started on a regular service between the hyphenated hostleries of these two cities.



First Shipment of Cartercar Taxicabs from Factory.

The Cartercar Company, of Detroit, which has taken up the manufacture of taxicabs in addition to its regular line, is equipping these cars with the friction transmission, and the new chain-in-oil drive.



Cadillacs Arriving in London.

The illustration shows a shipment of Cadillacs from the Detroit factory to the London branch, which have just been unloaded from a transatlantic liner, and gives an idea of the company's increasing export trade.

Proper Tire Inflation.—Perhaps the first to recognize the special importance of proper inflation was Edouard Michelin, the well-known tire manufacturer, who is a skilled scientist and has made a life-long study of rubber and its peculiarities. Mr. Michelin once observed that, although over-inflation was a common fault, fully 50 per cent. of the tires tested at the Michelin factories and branches were insufficiently inflated. "Don't be afraid of bursting the tires," said Mr. Michelin, recently, "the tires will stand as much pressure as an ordinary tire pump can put into them." The air pressure in the tires should be proportioned to the weight of the car and its occupants, the size of the tires and the horsepower of the motor. A booklet issued by the Michelin Tire Company, Milltown, N. J., contains tabulated instructions for determining the proper tire pressure, and is of value to any car owner, regardless of what particular tires he may be using.

One Thousand Magnetos a Week.—With 4,000 magnetos sold on minimum specified delivery for March, and orders increasing rapidly, the Remy Electric Company, of Anderson, Ind., has decided to try to produce 200 high-tension motor ignition systems every day, the present capacity being about 1,000 per week. In addition to making equipments for automobiles the concern is rushed with work from stationary and marine-engine manufacturers and a number of magnetos are being built especially for the big gasoline motors employed by the Union Pacific and other western railways. New men have been added to the office and factory force, and educated in the building of magnetos as rapidly as possible, and new machinery is being installed as fast as it can be secured. The Remy Company claims that it is the first to ship magnetos in carload lots, as it has done recently.

Quaker City Also Has a Non-Stop Run.—Just as a sort of Quaker City annex to the main show in Boston, the Philadelphia Maxwell agents, the Longstreth Motor Car Company, started one of their little \$500 "junior" runabouts on a 2,000-mile non-stop stunt last Saturday morning. Up and down Broad street and around the suburbs the compact little "junior" will plug away until its task is

finished. Drivers will work in eight-hour shifts, and relays of observers have been arranged for. No attempt at speeding will be made, and the arranged-for 12-miles-an-hour schedule should enable the car to complete its journey in about seven days. On Wednesday evening the car had completed 1,000 miles.

Pennsylvania Racing Team Formed.—With the intention of being represented in all important automobile contests during the coming season, a racing team has been established by the Pennsylvania Auto Motor Works, of Bryn Mawr, Pa. Len Zengle, the young driver who piloted the cars in most of the events last season, will have charge and will have three machines, a six-cylinder stock car of 75-horsepower, which has a guaranteed speed of 85 miles per hour, and will be used in all open events, a 50-horsepower, four-cylinder car and one of the small ones, 25-horsepower, which will be used in their respective classes.

Cause of Tire Heating and a Preventative.—Although after a long day's run the tires become considerably heated up so that the warmth is noticeable to the hand, the cause for this is not well known. According to a Goodyear expert tire-maker this is the direct result of the frictional action between the outer shoe and the inner tube. It cannot be wholly avoided, but by rubbing French chalk over the tube before it is inserted in the shoe it can be materially reduced. The chalk acts to reduce the friction to a minimum, and therefore diminishes the amount of heat generated and the wear resulting from it.

Marion Cars Not Discontinued.—In final contradiction of the report which became general some five months ago, that the Overland Company had purchased the Marion plant, and that the latter make of cars would be discontinued, the Marion Motor Car Company has announced its intention of producing 400 four-cylinder cars during the coming year, of 35-horsepower, and in

three styles, five-passenger touring cars, roadsters and toy tonneaus. The Marion Motor Car Sales Company, of Indianapolis, will have the sale of the entire output of the factory.

Anderson After Overland Factory.—The Overland Automobile Company and a committee representing the city of Anderson, Ind., are negotiating for the removal of the Overland factory to that town. It is reported that the company has signified its willingness to move providing the town furnish a factory site and a \$60,000 cash bonus. The committee are reported as favorably disposed toward the proposition but the deal has not yet been closed.

Night and Day Work Necessary at York.—Busy is hardly the word to apply to the York Motor Car Company, of York, Pa., for it is even better than that. So great has been the demand for Pullman cars that a night shift has been a positive necessity. With the factory working twenty-four hours a day, the officials hope to catch up with the orders. The present plans include 100 more cars than were originally planned for this year.

Chicago Dealers' Ticket.—The nominating committee of the Chicago Automobile Trade Association, through its chairman, E. Q. Corder, has named the following ticket for the annual election a week from Friday: For president, N. H. Van Sicklen, Sr.; for vice-president, H. C. Tillotson; for treasurer, Henry Paulman; for secretary, F. E. Sparks; for directors, Thomas J. Hay, E. Q. Corder and Walter L. Githens.

Unit Coil Company Buys Patents.—The Unit Coil Company, of Jersey City, N. J., owner of the Varley and Williams unit coil patents, announces that it has recently purchased the Brigham and Lawton buck-proof coil patents, and also two basic master vibrator patents issued to Miller and Dow in 1904.

Pardington Moves Parkway Offices.—A. R. Pardington, second vice-president and general manager of the Long Island Motor Parkway, Inc., has announced the removal of the offices of the corporation from 527 Fifth avenue, New York City, to the Denton building, Mineola, Long Island, where they will be located in future.

Busy Overtime Making Sparks.—The K-W Ignition Company, Whitney building, Cleveland, reports that it is so pressed with orders that a night shift has become an absolute necessity. The big plant is therefore working night and day to keep up with the requirements of its customers.

IN AND ABOUT THE AGENCIES.

Hoyt Electrical Instrument Works, New York.—The Hoyt Electrical Instrument Works, of Penacook, N. H., has opened an office at 1931 Broadway, New York City, to facilitate handling of its export business and to take care of its trade in the territory contiguous to New York. R. V. Sutcliffe, formerly superintendent of the Dayton Electrical Manufacturing Company, has been secured as branch manager.

Several KisselKar Agencies.—The Kissel Motor Company has announced the establishment of the following agencies for the KisselKar: Council Bluffs, Iowa, Bertschy Motor Company; Jacksonville, Ill., Dick Y. Rowe; Kankakee, Ill., E. A. Jeffers; Ashkum, Ill., Richard Meents; Ottawa, Ill., C. A. Miller; Bedford, Ind., A. E. Dickinson.

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Warner Auto-Meter, Seattle.—The Warner Instrument Company, manufacturers of the well-known auto-meter, have just opened their fourteenth branch house at 914 East Pike street, Seattle, Wash. This office will be in charge of H. L. Worthen, recently connected with the Los Angeles branch.

Rambler, Hartford, Conn.—As a direct result of the recent show, Mansuy & Smith have signed up to handle the Rambler. This firm is the largest horse dealer in the city and for some time has been doing motor car work. The large place of business at 17-19 Elm street is well equipped for the purpose.

National, Chicago.—Charles P. Root, chairman of the contest committee of the Chicago Motor Club, and a prominent figure in Windy City automobile circles, has taken the agency for the National cars in that city, in addition to handling the Truscott motor boats.

Moon, Milwaukee.—The State agency for the Moon line of cars has been taken by the Riverview Automobile Company, which will move into its new garage, May 1. The latter is located at 325 East North avenue, and is one of the most up-to-date in the northwest.

Winton, Cincinnati.—L. C. Denison, of Cleveland, has secured the Winton Six agency for Cincinnati and opened for business, March 15th, on Ninth street, between Vine and Sycamore, in premises lately occupied by the Cincinnati National Bank.

Chalmers-Detroit, Grand Rapids.—The Imperial Auto Company have received their 30 horsepower demonstrator and are busy exploiting the merits of the Chalmers-Detroit, for which they have taken the local agency.

Oldsmobile, Milwaukee.—The Olds Motor Works of Lansing, Mich., has established a branch in Milwaukee, with temporary headquarters with the Excelsior Motor Car Company, 621 Grand avenue, that city.

Brush, Hamburg, N. J.—An agency for the Brush runabout and delivery wagon has been established in Sussex County, N. J., with Reeve Harden, of Hamburg.

Ford, Fond du Lac, Wis.—P. B. Haber has been appointed agent for the Ford line at Fond du Lac, Wis., and surrounding territory.

Lozier, Wisconsin.—Willard V. B. Campbell, of Horicon, Wis., has been appointed State agent for Wisconsin of the Lozier.

E-M-F, Morristown, N. J.—Willard B. Smith, of Chatham, has been appointed agent for the E-M-F in this city.

Apperson, Milwaukee.—The American Automobile Company has taken the agency for the Apperson line.

RECENT BUSINESS CHANGES.

Chicago Trade Changes.—The tendency on the part of Chicago dealers to extend the row to the south has become even more pronounced, and last week it was announced that two more of the agencies would move from their present location in the heart of the row to the southern part of the line, where already the Stearns and Packard have secured sites. H. Paulman & Co., Chicago representatives of the Pierce-Arrow, now at 1430 Michigan avenue, have secured a lot 50 by 187 feet at 2420 Michigan avenue, where will be erected a two-story building which will be ready for occupancy by June 15. The Locomobile branch, now at Michigan avenue and Four-

teenth street, has leased property 75 by 171 feet at the southwest corner of Michigan and Twentieth street, and will build a three-story building of concrete and steel.

A. M. C. M. A., New York.—New and more commodious headquarters were last Monday occupied by the general offices of the American Motor Car Manufacturers' Association, on the fifteenth floor of 505 Fifth avenue, New York, half a block from the former office at 29 West Forty-second street.

Rutherford Rubber Company, New York.—The Rutherford Rubber Company, manufacturer of Sterling tires, has removed its headquarters from 253 West Forty-seventh street to Broadway and Fifty-third street.

Dow Tire Company, Boston.—The Dow Tire Company announces that its Boston office is now located at 893 Boylston street.

PERSONAL TRADE MENTION.

Some Ajax Trade Changes.—More changes in the Ajax-Grieb Rubber Company's sales forces have been announced. H. M. De Silva, who formerly traveled for the factory through the western territory, has been installed as manager of the Chicago branch. Leon B. Smith has been succeeded by Joseph S. Gibbs as manager of the New York branch, and the latter will have charge of the New York and Connecticut territory.

A. Eugene Michel has just opened new offices at 1572 Hudson Terminal Buildings, New York City, where he will act as advertising engineer for the promotion of automobile accessories, steam apparatus, power transmission appliances and machine tools. Mr. Michel is a graduate engineer, Associate Member of the A. S. M. E., and has had eleven years of advertising and engineering training.

Bertram Bailey, formerly general manager and engineer of the Tour Traction Auto Company, of Mankato, Minn., has resigned from that position to accept one as chief engineer of the Schurmeier Wagon Company, of St. Paul and Minneapolis.

OBITUARY.

Henry Bausch, of the Bausch & Lomb Optical Company of Rochester, N. Y., died in Augusta, Ga., on March 2, where he had been since early in January for his health,

his illness lasting for nearly a year. Mr. Bausch was the third son of J. J. Bausch, who, with Henry Lomb, organized the immense optical plant which bears their names, and in which Henry Bausch has been actively interested and engaged since 1875. He is survived by Mrs. Bausch and one daughter.

RECENT BUSINESS TROUBLES.

Pneu L'Electric Company, New York.—Schedules in bankruptcy of the Pneu L'Electric Company, dealers in automobile supplies in New York City, have been announced, showing liabilities of \$31,338 and nominal assets of \$12,856, consisting of stock, \$3,000; accounts, \$9,082, and cash on hand, \$774.

NEW TRADE PUBLICATIONS.

Ferro Machine & Foundry Company, Cleveland, O.—This is not a catalogue, as an extensive general catalogue is published separately, but is really a text-book for owners and operators of marine engines. Realizing the fact that so few people owning or interested in marine engines really understand the construction and operation of the motors thoroughly the Ferro company, the large marine engine builders, publish each year "A Practical Treatise" on the subject. The 1909 "Treatise" is the most exhaustive work ever published on the subject of marine gasoline engines. It tells in simple language and with the aid of more than 300 illustrations all about the construction, installation and operation of these motors. The book is compiled by some of the most practical motor experts in the country and is something every one interested in marine engines should have.

Trenton Rubber Mfg. Co., Trenton, N. J.—One of the neatest and most attractive bits of advertising literature that has come to hand recently is the product of the advertising manager of the Trenton Rubber Mfg. Co., makers of Thermoid brake lining. It is in the interest of this that the book is sent out, but one would have to search it through several times to find the advertising portion, so cleverly is it hidden. The book is 8½ by 11 in size, large enough for an excellent series of pictures, and the title is "The Automobile of 1909." Following the attractive frontispiece in colors, which shows a beautiful female bather ankle deep in the surf over the caption "A critical inspection invited," are illustrations of some forty motor cars with detailed specifications. The latter occupy the right hand pages of the book, while upon the left hand and facing the cars, are various beautiful and interesting scenes. These are not confined to any one section of the country, but are selected at random from the best the country affords. The only trace of advertising which mars this beautiful work from the point of view of the art connoisseur is the simple statement that each car uses Thermoid brake lining. It is a very effective piece of catalogue art.



Car Lot of Remy Magnetos Ready for Shipment from Factory.

The photograph shows a car being loaded at the factory of the Remy Electric Company, Anderson, Indiana, with high-tension magnetos for shipment to Eastern automobile factories. The Remy shipping department states that several carloads of magnetos and coils with special parts are shipped every month.

INFORMATION FOR AUTO USERS

Little Giant Air Compressors.—Every garage has a need for air in some form, it may be used to inflate tires, for starting stationary gas engines, for operating heating and brazing machines, for pneumatic tools, sand blasts and many other every-day purposes. In order to have air pressure for these purposes, a first-class compressor is a necessity. The Orange Machine & Mfg. Co., 10-14 Staton street, Orange, N. J., has brought out the Little Giant to meet this need. This is a small and inexpensive machine built in a thorough, workmanlike manner, the small details being given



LITTLE GIANT AIR COMPRESSOR OUTFIT.

a maximum amount of attention. It may be arranged for direct connection to a revolving shaft or can be belt-driven. The makers not only furnish the compressor, but the storage tank, piping, etc., so that a complete outfit may be obtained from them if desired.

Simms Magneto Switch Starter.—Now that magnetos have become deservedly popular, and well nigh universal, some form of a starting device is almost a necessity. The makers of the Simms magneto have come to the front with such a device and automobilists will doubtless welcome it with open arms. This has a special contact-breaker on the magneto, the switch starter on the dashboard and an ordinary accumulator.

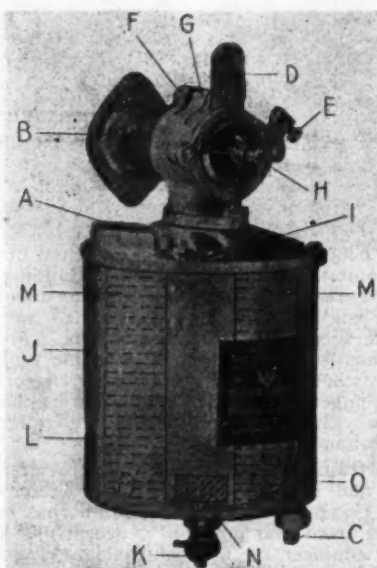


SIMMS DASHBOARD STARTING SWITCH.

Aside from these, the equipment is exactly like any other magneto outfit. The contact breaker is so designed that the points are normally separated, causing the armature primary circuit to be opened rather than closed. Then, by means of a special switch, a make-and-break current is instantly passed through

the primary winding, a very quick break causing an intense spark, which invariably starts the engine. After being started this runs on the magneto in the ordinary manner. Albert R. Miller, 42 Broadway, New York City, is the sole American representative of the Simms Magneto Company.

Triple Action Carbureters.—The woods are full of carbureters, some good, some bad, and some, neither the one nor the other. The Triple Action just brought out by the American Carburetor & Improvement Company, 1660-1668 Bushwick avenue, Brooklyn, belongs in the first class, and has the additional distinction of being different, that is, it works on a different principle. This device has no needle valve to regulate and practically no float:



DETAIL OF TRIPLE ACTION CARBURETER.

that is, there is a very small metal float but it is used for a different purpose than the ordinary. In the cut is shown the barrel-shaped portion which forms the body of the Type M carbureter. This is marked J and contains a series of concentric plates M, spaced just enough to make room for the spray tubes L. In the center is formed a round chamber, which leads to the mixing valve. The last, which is also the throttle, is mounted above the other chamber, and carries two adjustments. The first of these is for slow and the other, for high speeds. F is the regulating screw for the former and H, for the latter. The position of both is one that gives ready accessibility. In action, the gas enters at the bottom and is gasified by the air passing upward through it from the multitude of air tubes L. The plates are so arranged that a uniform quantity of gas must pass between them for their entire height before it can enter the central gas chamber. This rich gas is mixed with the proper quantity of air at the aforementioned valves and passes thence directly to the inlet pipes. Hot air from the exhaust pipe may be led in if desired at A. The float valve is seen at O, just above the gasoline inlet C. At K is the drain cock and all other parts are self-explanatory.

Auto Cap Purse.—The Gloversville Purse Company, Gloversville, N. Y., are bringing out a novelty in the line of leather purses intended primarily for automobilists. This is called the auto cap purse from its resemblance to the ordinary leather cap, but is a practical purse for coin or bills. These purses



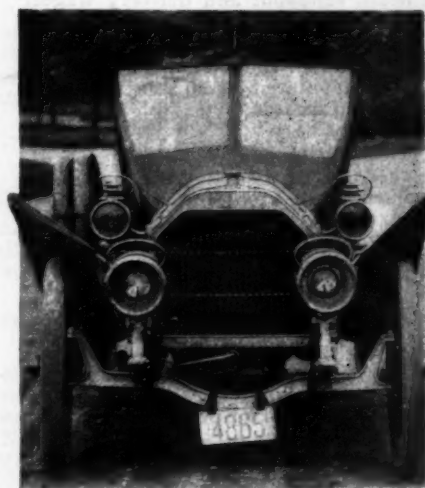
AUTO PURSE RESEMBLING A CAP.

are made in a variety of leathers and colors. The large, flat surface of the top gives a space for letters, names or advertisements. The purses can be stamped in gold or colors which in combination with the novelty of the shape makes a very attractive article.

The Auto Wind Shield.—As the illustration depicts, the device answering to the above title differs from wind shields in general, in that the driver looks over, and not through, the transparency, which is celluloid in this case. The shield is of a suitable grade of water-proof fabric, stretched over bows just as a cape top is fashioned, and besides warding off the wind and dust, which is deflected above the head of the driver, the shield keeps out the cold and the rain as well. Every autoist knows how futile it is to try to keep lap robes in place in such a way as to ward off the wind.

The shield puts an end to all the mechanicians of the wind and harbors the lucky autoist in a manner quite in keeping with the needs, which are indeed strenuous under certain conditions of inclement weather.

The wind shield fits closely around the driver's seat, buttons into place with but small effort, and folds back out of the way when it is desired to enter or leave the seat. It is a neat device, made strong, to



NEW TYPE OF WIND SHIELD.

withstand hard usage, and it in no way "badgers" the looks of a well designed automobile. The cost is very low indeed, considering the great utility of the shield, and the Auto Wind Shield Company, of Brattle Square, Cambridge, Mass., is to be congratulated in having invented and patented this excellent shield, the demand for which is so very brisk as to tax the facilities of the company to the utmost.